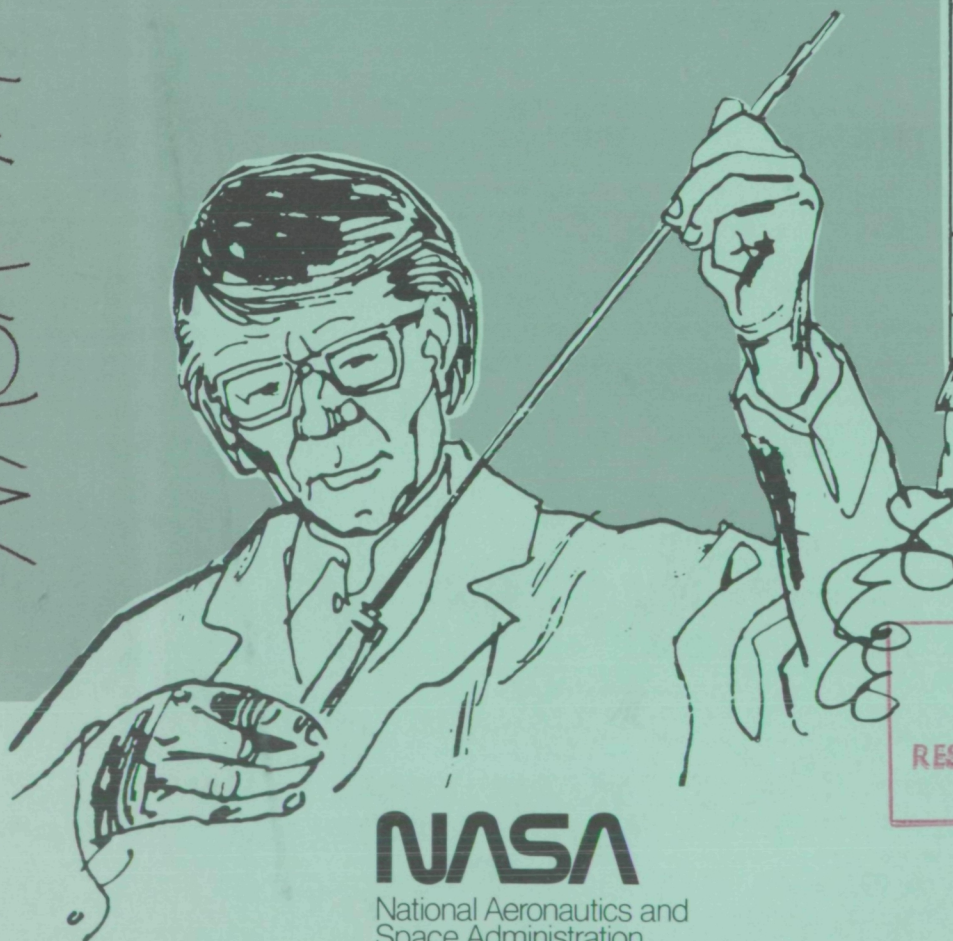


# NASA'S UNIVERSITY PROGRAM

ACTIVE PROJECTS

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## **IMPORTANT NOTICE**

This report is compiled primarily from information obtained from two internal NASA sources:

1. "CASE Report on Support of Colleges and Universities" (NASA Form 1356).
2. "Individual Procurement Action Report" (NASA Form 507).

Therefore, other sources should be used for completing Forms 507 or 1356.

**NASA'S UNIVERSITY PROGRAM**

**ACTIVE PROJECTS**

**FISCAL YEAR 1981**

**National Aeronautics and Space Administration  
University Affairs Office  
Washington, D C 20546**

*Acknowledgements*

This report was developed in Policy Coordination in the University Affairs Office under the guidance of W. A. Greene, Chief. Preparation of the input data for processing was accomplished by Doris Goodwin, Management Information Systems Supervisor. The Scientific and Technical Information Branch produced the reproduction masters on the Photon Computer.

*Additional Copies*

This publication is available from the National Technical Information Service (NTIS), 5285 Port Royal Rd., Springfield, Virginia 22161.



## FOREWORD

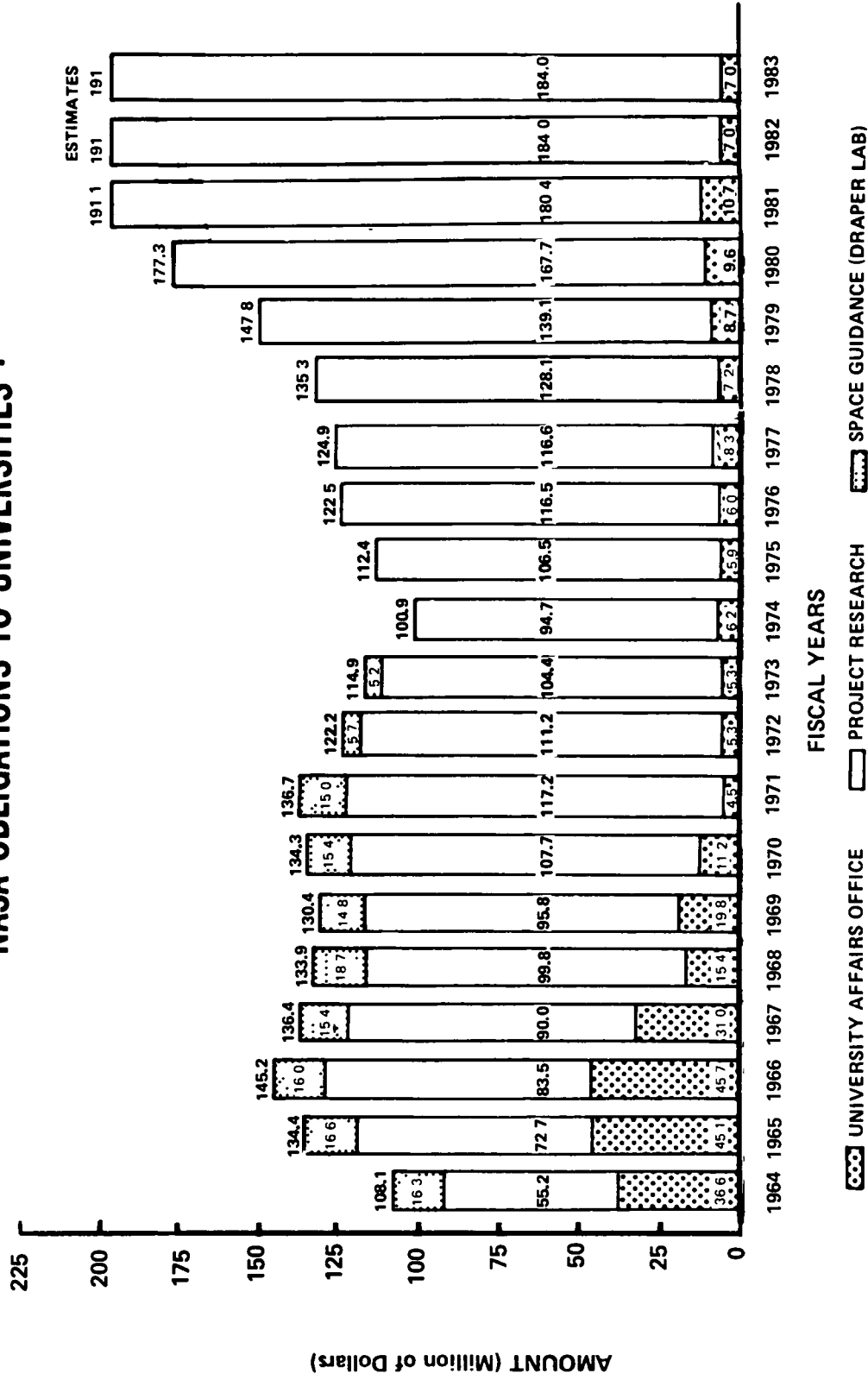
As basic policy NASA believes that colleges and universities should be encouraged to participate in the nation's space and aeronautics program to the maximum extent practicable. Indeed, universities are considered as partners with government and industry in the nation's aerospace program. NASA's objective is to have them bring their scientific, engineering, and social research competence to bear on aerospace problems and on the broader social, economic, and international implications of NASA's technical and scientific programs. It is expected that, in so doing, universities will strengthen both their research and their educational capabilities to contribute more effectively to the national well-being.

NASA Field Centers and certain Headquarters Program Offices provide funds for those R&D activities in universities which contribute to the mission needs of that particular NASA element. Although NASA has no predetermined amount of money to devote to university activities, the effort funded each year is substantial. (See the bar chart on the next page) This annual report is one means of documenting the NASA-university relationship, frequently denoted, collectively, as NASA's University Program.

The University Affairs Office (UAO) serves as a focal point for NASA's relationships with colleges and universities. One of its roles is to provide information on the NASA University Program. The present document is designed to serve several purposes and a wide range of audiences from private individuals to NASA employees. The emphasis is on the technical content of the program, rather than on fiscal data, which is available separately from UAO. As some terminology will not be familiar to all readers, a "User's Guide" is included to facilitate the fullest use of the material related to the interests of any particular reader.

Information on obtaining reports resulting from these projects may be obtained from NASA, Scientific and Technical Information Branch, Code NST, Washington, DC 20546.

# NASA OBLIGATIONS TO UNIVERSITIES .



- NOTES.
1. Excludes obligations to or through Federally Funded Research and Development Centers (e.g. JPL)
  2. Change in status from "university" to "non-profit" for three organizations accounts for \$10.1M of the difference between FY 73 and FY 74 (Draper Lab, ERIM, Dudley Observatory)
  3. University Affairs Office includes 1962-1971 Sustaining University Program.
  4. Omitted Obligations: Transition Period (July-Sept 1976). \$27.7M; FY 59, \$3.6M; FY 60, \$5.0M; FY 61, \$14.5M; FY 62, \$29.5M; FY 63, \$87.4M.

Source: NASA University Affairs Office

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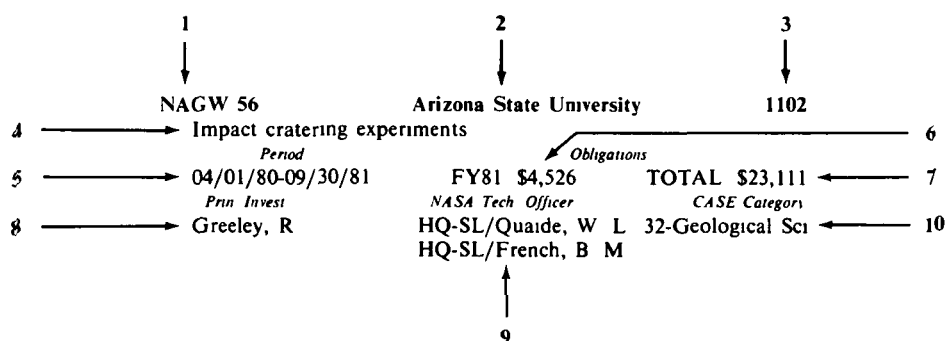
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## USER'S GUIDE

The University Program Report provides current information and related statistics for each grant/contract/cooperative agreement active during the report period. The following guidance is provided as an aid to the reader in readily locating material of interest and in optimizing the use of this document

### I. Typical Citation



- 1 Agreement Number.\*
- 2 Institution Name.
- 3 Accession Number
- 4 Brief work description.
- 5 Approximate period of performance.
- 6 Amount (if any) actually provided during the indicated fiscal year.
7. Total amount actually provided during the indicated period of performance
- 8 Principal Investigator(s) at the educational institution.
9. NASA Technical Officer(s) and organizational location.
- 10 CASE Field of Science and Engineering code and name

\*Uniquely identifies project. Prefixes denote type of instrument as follows

Grants	NAG, NAGW, NGF, NGT, NGL, NGR, NSG
Cooperative Agreements	NCC, NCCW
Contracts	DEN, NAS, NASR, NASW, NSR
Space Act Agreements	NCA
Purchase Orders	Single or Double Letter



## II. NASA Installations

NASA installations are included in the citation as abbreviations (item 9). The following listing of installations will be useful to those desiring further information on specific projects.

<b>Abbrev.</b>	<b>Installation Name and Address</b>	<b>Telephone Number for Information</b>
ARC	Ames Research Center NASA Moffett Field, CA 94035	415/965-5000
DFRC	Dryden Flight Research Center NASA P.O. Box 273 Edwards, CA 93523	805/258-3311
GSFC	Goddard Space Flight Center NASA Greenbelt, MD 20771	301/344-5121
JPL	Jet Propulsion Laboratory 4800 Oak Grove Drive Pasadena, CA 91109	213/354-4321
JSC	Johnson Space Center NASA Houston, TX 77058	713/483-3111
KSC	Kennedy Space Center NASA Kennedy Space Center, FL 32899	305/867-7110
LARC	Langley Research Center NASA Hampton, VA 23665	804/827-1110
LERC	Lewis Research Center NASA 21000 Brookpark Road Cleveland, OH 44135	216/433-4000
MSFC	Marshall Space Flight Center NASA Marshall Space Flight Center, AL 35812	205/453-2121
NSTL	National Space Technology Laboratories NASA NSTL Station, MS 39529	601/688-2211

WFC	Wallops Flight Center NASA Wallops Island, VA 23337	804/824-3411
HQ	NASA Headquarters Washington, DC 20546	202/755-2320

The abbreviation for NASA Headquarters, HQ, usually carries a suffix, for example HQ-LCU, which denotes a particular office and general area of responsibility (LCU is the University Affairs Office.) A full listing of the suffix letters and information on NASA's organizational structure may be found in the NASA Headquarters Telephone Directory (The Directory is for sale by the Superintendent of Documents, U S. Government Printing Office, Washington, D C 20402.)

### III. CASE Fields of Science and Engineering

The National Science Foundation (NSF) operates a government-wide system (CASE) for collecting and analyzing data on support to colleges and universities. Participating agencies report annually to NSF which in turn issues *Support to Universities, Colleges and Selected Nonprofit Institutions*. The CASE Fields, used in the extensive tabulations contained in that document, form the only consistent classification system for government sponsored research. The fields are listed in full in the Appendix.

### IV. Cross-Index

The cross-indexed Appendix provides rapid access to all projects in a particular area of endeavor, as defined by the CASE Fields. This listing is also easily used to determine the institutions and principal investigators conducting NASA projects in a field. Entries are related to the citations (descriptions) by the accession number (item 3). The accession number has meaning only in this report; it is in no way permanently associated with nor does it uniquely identify a specific grant/contract/cooperative agreement anywhere except in the present report. Accession numbers are assigned sequentially to the citations, beginning with 1000. Thus, when an entry of interest is identified in the Appendix, the associated accession number allows ready location of the full description in the body of the report.

# NASA'S UNIVERSITY PROGRAM

## ALABAMA

**NAG 8-1** **Alabama A&M University** **1000**  
 Development of capabilities for computer processing of remotely sensed data  
*Period* *Obligations*  
 01/23/80-01/22/83 **FY81** **TOTAL \$110,184**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Montgomery, O L NSTL/Mooneyhan, D W  
 NSTL/Whitley, S L 39-Env Sci, NEC

**NAG 8-13** **Alabama A&M University** **1001**  
 Development of capabilities for computer processing of remotely sensed data  
*Period* *Obligations*  
 06/26/81-06/25/84 **FY81 \$116,196** **TOTAL \$116,196**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Montgomery, O L NSTL/Mooneyhan, D W  
 NSTL/Whitley, S L 39-Env Sci, NEC

**NAS 8-32945** **Alabama A&M University** **1002**  
 Solution growth of crystals in zero gravity experiment for materials processing in space  
*Period* *Obligations*  
 03/05/78-03/05/83 **FY81 \$80,000** **TOTAL \$366,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Lal, R B MSFC/Williams, J R 47-Materials Engr

**NSG 8037** **Alabama A&M University** **1003**  
 Atmospheric effects on coherent laser systems  
*Period* *Obligations*  
 06/01/76-05/31/82 **FY81 \$28,068** **TOTAL \$149,713**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Murty, S S MSFC/Bilbro, J W 45-Elec Engr  
 MSFC/Kent, M I

**NSG 8041** **Alabama A&M University** **1004**  
 Parametric study of rock pile thermal storage for solar heating  
*Period* *Obligations*  
 06/01/76-03/31/80 **FY81** **TOTAL \$62,677**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Saha, H MSFC/Humphries, W R 46-Mech Engr  
 MSFC/Zurburg, F R

**NSG 8065** **Alabama A&M University** **1005**  
 Statistical classification techniques for engineering and climatic data samples  
*Period* *Obligations*  
 11/01/78-03/31/81 **FY81** **TOTAL \$57,274**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Temple, E C MSFC/Smith, O E 21-Mathematics  
 Shipman, J R MSFC/Kent, M I

**NSG 8066** **Alabama A&M University** **1006**  
 Research in computer processing of remotely sensed data  
*Period* *Obligations*  
 11/15/78-11/14/79 **FY81** **TOTAL \$70,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Montgomery, O L MSFC/Smith, A D 39-Env Sci, NEC  
 MSFC/Atwell, B H

**NSG 8067** **Alabama A&M University** **1007**  
 Characterization of space environment using plant cells and tissues  
*Period* *Obligations*  
 02/01/79-03/14/82 **FY81 \$54,229** **TOTAL \$132,310**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Sharma, G C MSFC/Snyder, R S 51-Biological Sci  
 Beyl, C MSFC/Kent, M I

**NSG 8068** **Alabama A&M University** **1008**  
 The motion of particles in interstellar space released from a nuclear waste payload container  
*Period* *Obligations*  
 07/01/79-08/31/81 **FY81** **TOTAL \$52,416**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Williams, A C MSFC/Burns, R E 13-Physics  
 MSFC/Kent, M I

**NAS 8-32920** **Athens State College** **1009**  
 Vapor transport mechanisms  
*Period* *Obligations*  
 02/01/78-08/20/81 **FY81 \$41,983** **TOTAL \$170,918**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Workman, G L MSFC/Reaves, F A 19-Phys Sci, NEC  
 Holland, L R MSFC/Zwiener, J

**NAS 8-34432** **Athens State College** **1010**  
 Vapor transport mechanisms  
*Period* *Obligations*  
 08/27/81-08/26/82 **FY81 \$10,000** **TOTAL \$10,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Holland, L R MSFC/Reeves, F A 39-Env Sci, NEC  
 MSFC/Zwiener, J

**NAG 3-103** **Auburn University** **1011**  
 Development of laser speckle techniques and procedures for determining stresses in rotating turbine blades  
*Period* *Obligations*  
 09/15/80-12/15/81 **FY81** **TOTAL \$44,455**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Swinson, W F LERC/Decker, A J 46-Mech Engr  
 Turner, J L

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-33092**                      **Auburn University**                      **1012**  
 Developing and characterizing improved radiation hard technology  
 for space applications (CMOS)  
*Period*                                      *Obligations*  
 11/06/78-07/31/81                      FY81                      TOTAL \$30,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Kerns, D V                      MSFC/Routh, D E                      45-Elec Engr  
 Cook, K B                      MSFC/Gould, J M

**NSG 2217**                      **Talladega College**                      **1018**  
 Experimental research on the thermodynamic properties of sulfuric  
 acid  
*Period*                                      *Obligations*  
 05/01/77-06/30/81                      FY81                      TOTAL \$159,625  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Morrison, R A                      ARC/Whitten, R C                      13-Physics  
 Chu, K S                      ARC/Farlow, N A

**NAS 8-33880**                      **Auburn University**                      **1013**  
 Radiation and scattering of ionized lightning channels  
*Period*                                      *Obligations*  
 05/28/80-09/15/81                      FY81 \$17,453                      TOTAL \$35,453  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Shumpert, T                      MSFC/Harper, W                      45-Elec Engr  
    MSFC/Wagnon, F W

**NAG 1-31**                      **Tuskegee Institute**                      **1019**  
 Software requirements for a robot visual system operating in  
 real-time  
*Period*                                      *Obligations*  
 02/01/80-12/31/81                      FY81 \$1,850                      TOTAL \$20,615  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Bales, J W                      LARC/Barker, L K                      22-Computer Science  
    LARC/Hankins, W W

**NAS 8-33886**                      **Auburn University**                      **1014**  
 Research study Solid rocket motor internal ballistic performance  
 variations  
*Period*                                      *Obligations*  
 09/03/80-03/31/82                      FY81 \$39,997                      TOTAL \$75,967  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Foster, W A                      MSFC/Shackelford, B J                      42-Astro Engr  
 Storzini, R H                      MSFC/Miller, J Q

**NAG 1-72**                      **Tuskegee Institute**                      **1020**  
 Minimization of differences between simulated and actual flight  
 data for area navigation on high speed aircraft  
*Period*                                      *Obligations*  
 05/19/80-08/18/81                      FY81                      TOTAL \$42,222  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Hargrove, A                      LARC/Knox, C E                      41-Aero Engr

**NAS 8-34130**                      **Auburn University**                      **1015**  
 Application of aerospace dynamic modeling techniques of civil  
 engineering structures  
*Period*                                      *Obligations*  
 10/01/80-01/30/82                      FY81 \$9,991                      TOTAL \$59,991  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Moore, R K                      MSFC/Slaby, J A                      32-Geological Sci  
 Ramey, G E                      MSFC/Schock, R W  
 Yoo, C J

**NAG 1-172**                      **Tuskegee Institute**                      **1021**  
 Solution of nonlinear multivariable constrained systems using  
 gradient projection digital algorithm insensitive to initial state  
*Period*                                      *Obligations*  
 05/01/81-04/30/82                      FY81 \$70,658                      TOTAL \$70,658  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Hargrove, A                      LARC/Hogge, J E  
    LARC/Shoosmith, J N  
    29-Math Computer Sci, NEC

**NCA 8-132**                      **Auburn University**                      **1016**  
 Solid propellant rocket motor internal ballistic performance  
 variation analysis  
*Period*                                      *Obligations*  
 01/12/79-01/11/80                      FY81                      TOTAL \$35,058  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Sforzini, R H                      MSFC/Shackelford, B W                      46-Mech Engr  
    MSFC/Miller, J Q

**NAG 3-76**                      **Tuskegee Institute**                      **1022**  
 Characterization of advanced electric propulsion systems  
*Period*                                      *Obligations*  
 06/02/80-12/31/81                      FY81                      TOTAL \$38,367  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Ray, P K                      LERC/Kerslake, W R                      19-Phys Sci, NEC

**NCA 8-133**                      **Auburn University**                      **1017**  
 Evaluating the feasibility of detecting and measuring lightning  
 discharges from a space station  
*Period*                                      *Obligations*  
 01/26/79-11/25/79                      FY81                      TOTAL \$3,980  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Irwin, J D                      MSFC/Wagnon, F W                      45-Elec Engr  
    MSFC/Harper, W

**NAG 8-5**                      **Tuskegee Institute**                      **1023**  
 Investigation of degradation process of insulating materials  
*Period*                                      *Obligations*  
 05/01/80-09/30/81                      FY81                      TOTAL \$36,848  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Doeswamy, C V                      MSFC/Peacock, C L                      45-Elec Engr  
    MSFC/Kent, M I

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAG10-1 Tuskegee Institute 1024**  
Study of permeability of polymeric materials to condensable gases and organic liquids  
*Period Obligations*  
02/25/80-02/24/82 FY81 \$50,265 TOTAL \$80,142  
*Prin Invest NASA Tech Officer CASE Category*  
Dillon, I G KSC/Bryan, C J 12-Chemistry

**NCC 2-12 Tuskegee Institute 1025**  
Morphometrics of cellular damage in mice receiving whole body irradiation  
*Period Obligations*  
08/01/79-07/31/82 FY81 \$65,000 TOTAL \$135,000  
*Prin Invest NASA Tech Officer CASE Category*  
Sapp, W J ARC/Philpott, D E 54-Env Biology

**NGT 01-005-750 Tuskegee Institute 1026**  
Training of undergraduate students in sciences and engineering  
*Period Obligations*  
06/01/75-05/31/82 FY81 \$28,000 TOTAL \$110,887  
*Prin Invest NASA Tech Officer CASE Category*  
Dybczak, Z W HQ-LC/Pohly, J G 49-Engr, NEC  
HQ-U/Jenkins, H G

**NSG 3154 Tuskegee Institute 1027**  
Evaporation behavior of superalloys  
*Period Obligations*  
08/01/77-09/01/80 FY81 TOTAL \$91,867  
*Prin Invest NASA Tech Officer CASE Category*  
Ramirez, R P LERC/Titran, R H 47-Materials Engr  
LERC/Klopp, W D

**NSG 3295 Tuskegee Institute 1028**  
An improved computer model for prediction of axial gas turbine performance losses  
*Period Obligations*  
08/01/79-08/30/82 FY81 \$41,195 TOTAL \$113,113  
*Prin Invest NASA Tech Officer CASE Category*  
Jenkins, R M LERC/Civinskas, K C 41-Aero Engr

**NSG 8038 Tuskegee Institute 1029**  
Investigation of electrical breakdown characteristics and stability of insulating materials used on solar cells (photovoltaic converters)  
*Period Obligations*  
08/01/76-12/31/79 FY81 \$87 TOTAL \$49,015  
*Prin Invest NASA Tech Officer CASE Category*  
Doreswamy, C V MSFC/Young, L E 45-Elec Engr  
MSFC/Kent, M I

**NSG 8054 Tuskegee Institute 1030**  
An investigation of absorber and radiators for solar power systems  
*Period Obligations*  
09/01/77-10/31/81 FY81 TOTAL \$92,441  
*Prin Invest NASA Tech Officer CASE Category*  
Sellers, J P, Jr MSFC/Peoples, J A 46-Mech Engr  
MSFC/Kent, M I

**NGR 01-010-001 University of Alabama - Birmingham 1031**  
Model for origin and coevolution of genetic code and the process of protein synthesis  
*Period Obligations*  
05/09/73-05/31/82 FY81 \$89,038 TOTAL \$423,056  
*Prin Invest NASA Tech Officer CASE Category*  
Lacey, J C, Jr HQ-SB/Devincenzi, D L 12-Chemistry

**NAGW 9 University of Alabama - Huntsville 1032**  
Dynamical behavior of a flaring loop two-dimensional, time-dependent MHD (magnetohydrodynamic) flux tube model  
*Period Obligations*  
10/01/79-07/14/82 FY81 \$70,000 TOTAL \$95,000  
*Prin Invest NASA Tech Officer CASE Category*  
Wu, S T HQ-SC/Chipman, E 13-Physics

**NAGW 247 University of Alabama - Huntsville 1033**  
Cometary spectroscopy  
*Period Obligations*  
11/01/81-10/31/82 FY81 \$23,002 TOTAL \$23,002  
*Prin Invest NASA Tech Officer CASE Category*  
Smith, B A HQ-SL/Brunk, W E 11-Astronomy  
Larson, S M HQ-SL/Murphy, R E

**NAS 8-28097 University of Alabama - Huntsville 1034**  
Triggering mechanisms for solar flares  
*Period Obligations*  
12/06/71-02/28/81 FY81 TOTAL \$581,898  
*Prin Invest NASA Tech Officer CASE Category*  
Wu, S T MSFC/Hanssen, T 13-Physics  
MSFC/Watkins, J R

**NAS 8-29316 University of Alabama - Huntsville 1035**  
Working model of the London Moment Readout System  
*Period Obligations*  
10/06/72-09/30/81 FY81 TOTAL \$698,181  
*Prin Invest NASA Tech Officer CASE Category*  
Hendricks, J B MSFC/Decher, R 46-Mech Engr  
Karr, G R MSFC/Urban, E W

**NAS 8-30563 University of Alabama - Huntsville 1036**  
Study of magnetospheric and laboratory plasma physics experiments  
*Period Obligations*  
09/01/74-01/31/82 FY81 TOTAL \$466,669  
*Prin Invest NASA Tech Officer CASE Category*  
Comfort, R H MSFC/Chappell, C R 13-Physics  
Horwitz, J L MSFC/Fields, S F

**NAS 8-31170 University of Alabama - Huntsville 1037**  
Study of efficient low power diffractometer designs  
*Period Obligations*  
01/15/75-12/15/81 FY81 \$15,000 TOTAL \$175,888  
*Prin Invest NASA Tech Officer CASE Category*  
Gregory, J C MSFC/Parnell, T A 13-Physics  
MSFC/Austin, R W



**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-31293**      **University of Alabama - Huntsville**      **1038**  
Solar heating and cooling technical data and systems analysis  
*Period*      *Obligations*  
11/07/74-09/30/81      FY81 \$158,627      TOTAL \$1,787,718  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Staton, B G      MSFC/Krupnick, A C      13-Physics  
MSFC/Davidson, T

**NAS 8-31729**      **University of Alabama - Huntsville**      **1039**  
Numerical simulation of warm fogs  
*Period*      *Obligations*  
11/05/75-07/31/80      FY81      TOTAL \$74,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hung, R J      MSFC/Vaughn, O H      13-Physics  
MSFC/Anderson, B J

**NAS 8-31895**      **University of Alabama - Huntsville**      **1040**  
Investigations in cosmic ray and gamma ray astronomy and nuclear instruments  
*Period*      *Obligations*  
03/19/76-10/31/81      FY81      TOTAL \$270,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gregory, J C      MSFC/Parnell, T A      13-Physics  
MSFC/Eby, P B

**NAS 8-32818**      **University of Alabama - Huntsville**      **1041**  
Infrared telescope cryogenic system design and development  
*Period*      *Obligations*  
03/31/78-01/31/82      FY81 \$69,121      TOTAL \$293,938  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Karr, G R      MSFC/Urban, E W      13-Physics  
Hendricks, J B      MSFC/Katz, L

**NAS 8-33096**      **University of Alabama - Huntsville**      **1042**  
Design automation of digital systems  
*Period*      *Obligations*  
08/09/78-09/30/82      FY81 \$50,000      TOTAL \$156,278  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Shiva, S G      MSFC/Juergensen, K      22-Computer Science  
MSFC/Gould, J M

**NAS 8-33132**      **University of Alabama - Huntsville**      **1043**  
Orbiting space science platform  
*Period*      *Obligations*  
06/01/78-09/30/81      FY81 \$8,066      TOTAL \$134,419  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Wu, S T      MSFC/Ballance, J      19-Phys Sci, NEC  
MSFC/Hichey, J D

**NAS 8-33377**      **University of Alabama - Huntsville**      **1044**  
Analysis and modeling of materials space environmental effects data  
*Period*      *Obligations*  
06/22/79-08/31/81      FY81 \$18,000      TOTAL \$92,972  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Davis, J H      MSFC/Whitaker, A F      47-Materials Engr  
Wagner, P      MSFC/Peacock, C L

**NAS 8-33384**      **University of Alabama - Huntsville**      **1045**  
Test facility for Helium-3 refrigerator research  
*Period*      *Obligations*  
05/31/79-11/30/81      FY81      TOTAL \$72,322  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hendricks, J B      MSFC/Ladner, E R      12-Chemistry  
MSFC/Urban, E W

**NAS 8-33443**      **University of Alabama - Huntsville**      **1046**  
Solar-terrestrial relationships  
*Period*      *Obligations*  
04/18/79-05/04/81      FY81      TOTAL \$51,300  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Wu, S T      MSFC/Morgan, S H      19-Phys Sci, NEC  
MSFC/Laurine, J

**NAS 8-33525**      **University of Alabama - Huntsville**      **1047**  
Analysis and application of vector magnetic field data in predicting flares  
*Period*      *Obligations*  
03/03/80-09/02/82      FY81 \$24,300      TOTAL \$64,507  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Krall, K R      MSFC/Hagyard, D J      31-Atmos Sci  
Wu, S T      MSFC/Tandberghanssen, E  
Smith, J B

**NAS 8-33526**      **University of Alabama - Huntsville**      **1048**  
Data analysis and modeling of ultraviolet spectrometer and polarimeter (UVSP) experiment and other related experiments for Solar Maximum Mission (SMM)  
*Period*      *Obligations*  
02/29/80-06/28/82      FY81 \$147,069      TOTAL \$227,069  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Wu, S T      MSFC/Tandberghanssen, E      31-Atmos Sci  
MSFC/Watkins, J R

**NAS 8-33542**      **University of Alabama - Huntsville**      **1049**  
Advanced furnace development and scientific coordination activity  
*Period*      *Obligations*  
06/29/79-01/31/82      FY81      TOTAL \$68,955  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hendricks, J B      MSFC/Bass, B G      47-Materials Engr  
MSFC/Horton, J

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-33548**      **University of Alabama - Huntsville**      **1050**  
 An X-ray diffraction analysis of Ne3Ge  
*Period*      *Obligations*  
 07/11/79-02/10/82      FY81 \$15,000      TOTAL \$25,104  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Davis, J H.      MSFC/Rathz, L L      47-Materials Engr  
                                  MSFC/Robinson, M B

**NAS 8-33889**      **University of Alabama - Huntsville**      **1057**  
 Product end user analysis including environmental, safety and retrofit problems for medium Btu synthesis gas  
*Period*      *Obligations*  
 04/30/80-08/29/80      FY81      TOTAL \$11,657  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Proffitt, S      MSFC/Rutland, C M      39-Env Sci, NEC

**NAS 8-33726**      **University of Alabama - Huntsville**      **1051**  
 Study effects of internal wave on the neutral atmosphere  
*Period*      *Obligations*  
 02/11/80-02/11/82      FY81 \$90,000      TOTAL \$170,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hung, R J      MSFC/West, G W      32-Geological Sci

**NAS 8-33975**      **University of Alabama - Huntsville**      **1058**  
 High energy cosmic ray balloon flight investigations  
*Period*      *Obligations*  
 06/13/80-12/15/81      FY81 \$48,000      TOTAL \$84,688  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Gregory, J C      MSFC/Fishman, G J      13-Physics  
                                  MSFC/Parnell, T A

**NAS 8-33731**      **University of Alabama - Huntsville**      **1052**  
 Containerless processing technology analysis  
*Period*      *Obligations*  
 05/09/80-12/14/81      FY81      TOTAL \$60,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Rush, J E      MSFC/Ethridge, E C      13-Physics  
                                  MSFC/Theiss, J M

**NAS 8-33977**      **University of Alabama - Huntsville**      **1059**  
 X-ray astronomy instrumentation studies  
*Period*      *Obligations*  
 07/18/80-07/17/81      FY81      TOTAL \$15,997  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Gregory, J C      MSFC/Weisskopf, M C      11-Astronomy  
                                  MSFC/Parnell, T H

**NAS 8-33809**      **University of Alabama - Huntsville**      **1053**  
 Research related to the relativity Explorer  
*Period*      *Obligations*  
 05/21/81-05/20/82      FY81 \$92,500      TOTAL \$92,500  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Karr, G R      MSFC/Decher, R      31-Atmos Sci  
 Hendricks, J B      MSFC/Urban, E W

**NAS 8-33978**      **University of Alabama - Huntsville**      **1060**  
 New polymers for low-gravity purification of cells by partitioning  
*Period*      *Obligations*  
 09/10/80-10/09/82      FY81      TOTAL \$46,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Harris, J M      MSFC/Moore,Jr, W W      12-Chemistry  
                                  MSFC/Synder, R

**NAS 8-33810**      **University of Alabama - Huntsville**      **1054**  
 Directionally solidify superconducting materials  
*Period*      *Obligations*  
 06/29/81-06/28/82      FY81 \$12,000      TOTAL \$12,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Davis, J      MSFC/Johnston, M H      47-Materials Engr

**NAS 8-33982**      **University of Alabama - Huntsville**      **1061**  
 Plasma and magnetospheric research  
*Period*      *Obligations*  
 08/27/80-11/27/81      FY81 \$150,999      TOTAL \$240,499  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Comfort, R H      MSFC/Chappell, C R      13-Physics  
 Horwitz, J L      MSFC/Fields, S A

**NAS 8-33811**      **University of Alabama - Huntsville**      **1055**  
 Hydrogen embrittlement in Cu-Ni alloys  
*Period*      *Obligations*  
 05/27/81-05/26/82      FY81 \$20,000      TOTAL \$20,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Davis, J H      MSFC/McClure, J C      47-Materials Engr

**NAS 8-34129**      **University of Alabama - Huntsville**      **1062**  
 Data-based management system (DBMS) group  
*Period*      *Obligations*  
 09/19/80-11/18/80      FY81      TOTAL \$18,599  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Horwitz, J L      MSFC/Green, J L      29-Math Computer Sci, NEC  
                                  MSFC/Baugher, C

**NAS 8-33812**      **University of Alabama - Huntsville**      **1056**  
 Electrodeposition in microgravity  
*Period*      *Obligations*  
 05/13/81-05/12/82      FY81 \$25,000      TOTAL \$25,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Riley, C      MSFC/Owen, R B      31-Atmos Sci  
 Coble, H D      MSFC/Bass, B B

**NAS 8-34137**      **University of Alabama - Huntsville**      **1063**  
 Burst and transient source experiment (BATSE) for the gamma-ray observatory  
*Period*      *Obligations*  
 02/05/81-02/15/82      FY81 \$57,985      TOTAL \$57,985  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Wilson, R R      MSFC/Fishman, G J      31-Atmos Sci  
                                  MSFC/Parnell, T A

**NASA'S UNIVERSITY PROGRAM**  
**ALABAMA (Continued)**

**NAS 8-34187**      **University of Alabama - Huntsville**      **1064**  
 Geostationary platform workshop  
*Period*      *Obligations*  
 09/02/80-10/09/81      FY81 \$8,818      TOTAL \$43,662  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carter, E      MSFC/Carey, W T      19-Phys Sci, NEC

**NAS 8-34338**      **University of Alabama - Huntsville**      **1065**  
 Analysis of silicon solar cell and non-metallic materials space environmental effects data  
*Period*      *Obligations*  
 03/19/81-01/18/82      FY81 \$19,998      TOTAL \$19,998  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Wagner, P E      MSFC/Whitaker, A F      47-Materials Engr  
                                  MSFC/Little, S

**NAS 8-34365**      **University of Alabama - Huntsville**      **1066**  
 Chemical release module facility announcement of opportunity (OSS-2-78 addendum 1980-b) review activities  
*Period*      *Obligations*  
 02/13/81-07/31/81      FY81 \$1,788      TOTAL \$1,788  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carter, E A      MSFC/lse, R      31-Atmos Sci  
                                  MSFC/Richards, L

**NAS 8-34530**      **University of Alabama - Huntsville**      **1067**  
 Materials processing in low gravity program  
*Period*      *Obligations*  
 06/19/81-12/18/81      FY81 \$85,000      TOTAL \$85,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Workman, G L      MSFC/Williams, J R      13-Physics  
                                  MSFC/Brown, R L

**NAS 8-34534**      **University of Alabama - Huntsville**      **1068**  
 Assessment of the solar-terrestrial data base management system (DBMS)  
*Period*      *Obligations*  
 08/12/81-08/11/82      FY81 \$12,000      TOTAL \$12,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Horwitz, J L      MSFC/Green, J L      22-Computer Science  
                                  MSFC/Baugher, C

**NAS 8-34573**      **University of Alabama - Huntsville**      **1069**  
 Advanced solar physics experimental concepts to address particular science problems of interest  
*Period*      *Obligations*  
 09/01/81-03/30/82      FY81 \$76,111      TOTAL \$76,111  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Wu, S T      MSFC/Ballance, J O      19-Phys Sci, NEC  
                                  MSFC/Nein, M E

**NGT 01-002-081**      **University of Alabama - Huntsville**      **1070**  
 Modeling of the evolution of magnetic field structure in an active region  
*Period*      *Obligations*  
 09/01/80-08/31/82      FY81 \$11,000      TOTAL \$18,200  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Wu, S T      HQ-LC/Carter, C H      19-Phys Sci, NEC

**NGT 01-002-082**      **University of Alabama - Huntsville**      **1071**  
 Correlations between auroral features and low-energy ion characteristics in the magnetosphere  
*Period*      *Obligations*  
 09/01/80-08/31/81      FY81      TOTAL \$7,200  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Horwitz, J L      MSFC/Green, J L      13-Physics  
                                  HQ-LC/Carter, C H

**NGT 01-002-083**      **University of Alabama - Huntsville**      **1072**  
 Graduate student researchers program  
*Period*      *Obligations*  
 09/01/80-08/31/81      FY81      TOTAL \$7,200  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Karr, G R      MSFC/Urban, E W      46-Mech Engr

**NGT 01-008-021**      **University of Alabama - Huntsville**      **1073**  
 Summer faculty fellowship program  
*Period*      *Obligations*  
 01/01/76-03/31/82      FY81 \$215,663      TOTAL \$586,624  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Karr, G R      HQ-LC/Carter, C H      49-Engr, NEC

**NGT 01-008-800**      **University of Alabama - Huntsville**      **1074**  
 Graduate student researchers program  
*Period*      *Obligations*  
 06/01/81-05/31/82      FY81 \$8,350      TOTAL \$8,350  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Horowitz, J L      HQ-LC/Carter, C H      13-Physics

**NGT 01-008-801**      **University of Alabama - Huntsville**      **1075**  
 Graduate student researchers program  
*Period*      *Obligations*  
 04/01/81-03/31/82      FY81 \$8,400      TOTAL \$8,400  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Wagner, P E      HQ-LC/Carter, C H      13-Physics

**NGT 01-008-802**      **University of Alabama - Huntsville**      **1076**  
 Graduate student researchers program  
*Period*      *Obligations*  
 09/01/81-08/30/82      FY81 \$8,630      TOTAL \$8,630  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Smalley, L L      HQ-LC/Carter, C H      13-Physics

# NASA'S UNIVERSITY PROGRAM

## ALABAMA (Continued)

**USG 5413** University of Alabama - Huntsville **1077**  
Pitch angle distributions of thermal ions in the inner thermosphere

Period	Obligations	
10/01/79-09/30/80	FY81	TOTAL \$24,952
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Horwitz, J L	GSFC/Corrigan, J P	11-Astronomy

**NAS 8-33507** University of Alabama - University **1078**  
Space Shuttle induced environment contamination monitor (IECM) air sampler experiment

Period	Obligations	
05/21/79-03/21/83	FY81 \$12,000	TOTAL \$36,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bertsch, W	MSFC/Peters, P N	31-Atmos Sci
Zatko, D A	MSFC/Hester, H B	

**NAS 8-34529** University of Alabama - University **1079**  
Pinhole/coronagraph pointing control system integration and noise reduction analysis

Period	Obligations	
05/07/81-08/15/81	FY81 \$23,500	TOTAL \$23,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greene, M	MSFC/Ballance, J O	42-Astro Engr

**NGT 01-002-099** University of Alabama - University **1080**  
Summer faculty fellowship program in research

Period	Obligations	
01/01/78-12/31/81	FY81	TOTAL \$346,100
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Barfield, B F	HQ-LC/Carter, C H	49-Engr, NEC

**NGT 01-002-800** University of Alabama - University **1081**  
Graduate student researchers program

Period	Obligations	
06/01/81-05/31/82	FY81 \$12,820	TOTAL \$12,820
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Desmet, D J	HQ-LC/Carter, C H	11-Astronomy

## ALASKA

**NAG 6-1** University of Alaska - Fairbanks **1082**  
Fluorescent plasma tracer and perturbation experiments from sounding rockets

Period	Obligations	
01/01/80-12/31/81	FY81 \$156,267	TOTAL \$274,218
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wescott, E M	WFC/Early, L J	19-Phys Sci, NEC
	WFC/Pless, R H	

**NAG 9-8** University of Alaska - Fairbanks **1083**  
Applications of radar and infrared airborne remote sensing to geothermal research on Pilgram Springs, Alaska

Period	Obligations	
02/01/80-09/30/81	FY81 \$15,000	TOTAL \$70,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Forbes, R B	JSC/Duke, M B	32-Geological Sci

**NAG 9-9** University of Alaska - Fairbanks **1084**  
Application of airborne remote sensing to problems caused by increased volcanic heat flux of Mt Wrangell

Period	Obligations	
06/01/80-12/31/81	FY81 \$15,000	TOTAL \$35,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Benson, C S	JSC/Duke, M B	32-Geological Sci

**NAS 6-3065** University of Alaska - Fairbanks **1085**  
S/M and personnel for the operation and maintenance of the Poker Flat research range

Period	Obligations	
11/01/79-10/31/81	FY81 \$1,058,420	TOTAL \$1,878,927
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brown, N B	WFC/Gray, J W	31-Atmos Sci
Roederer, J G	WFC/McGoogan, M W	

**NCA 2-20002** University of Alaska - Fairbanks **1086**  
Enhancement of LANDSAT data for the analysis of Subarctic wetlands

Period	Obligations	
08/15/80-12/31/81	FY81 \$18,371	TOTAL \$23,505
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
George, T H	ARC/Wilson, D E	39-Env Sci, NEC

**NCA 2-20902** University of Alaska - Fairbanks **1087**  
Regulation of nutrient availability and plant nutrient uptake in controlled environments

Period	Obligations	
09/01/79-08/31/81	FY81	TOTAL \$17,302
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bloom, A J	ARC/MacElroy, R D	51-Biological Sci

**NGL 02-001-092** University of Alaska - Fairbanks **1088**  
Application of remote sensing data to surveys of the Alaskan environment

Period	Obligations	
07/26/72-03/31/82	FY81	TOTAL \$975,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miller, J M	HQ-ET/Vitale, J A	39-Env Sci, NEC

**NSG 5219** University of Alaska - Fairbanks **1089**  
Auroral spectroscopy using atmosphere Explorer observations

Period	Obligations	
10/01/77-12/31/81	FY81 \$25,747	TOTAL \$72,747
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rees, M H	GSFC/Spencer, N W	13-Physics

## NASA'S UNIVERSITY PROGRAM

### ALASKA (Continued)

NSG 5409		University of Alaska - Fairbanks	1090
Study of magnetopause/boundary layer and plasma sheet structures			
<i>Period</i>		<i>Obligations</i>	
09/15/79-10/14/81	FY81	\$25,173	TOTAL \$50,173
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Lee, L C	GSFC/Corrigan, J P		11-Astronomy

NSG 7447	University of Alaska - Fairbanks	1091
Study of the relationship between the ring current and magnetospheric substorms	Study of possible relationship of sudden stratospheric warmings with magnetospheric substorms	
<i>Period</i>	<i>Obligations</i>	
06/01/78-05/31/82	FY81 \$49,379	TOTAL \$174,379
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Akasofu, S I	HQ-SC/Mayr, H G	19-Phys Sci, NEC
	HQ-SC/Schmerling, E R	

NSG 7625	University of Alaska - Fairbanks	1092
Numerical simulation of the turbulent cascade and voltage amplification mechanism in the magnetosphere		
<i>Period</i>	<i>Obligations</i>	
07/01/79-06/30/81	FY81	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Swift, O W	HQ-SC/Hedin, A E	19-Phys Sci, NEC
	HQ-SC/Schmerling, E R	

## ARIZONA

DEN 3-50	Arizona State University	1093
Social and economic impact study of photovoltaic power		
<i>Period</i>	<i>Obligations</i>	
07/10/78-03/09/80	FY81	TOTAL \$16,190
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bahr, D M	LERC/Bifano, W J	72-Economics
Merbs, C F		

NAG 3-6	Arizona State University	1094
Transient response of rotor bearing systems using component mode synthesis		
<i>Period</i>	<i>Obligations</i>	
01/01/80-05/31/82	FY81 \$73,286	TOTAL \$136,574
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nelson, H D	LERC/Fleming, D P	46-Mech Engr
Russell, S J	LERC/Kascak, A F	

<b>NAG 3-105</b>	<b>Arizona State University</b>	<b>1095</b>
<b>Feasibility study of a new type of cascade solar cell</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/22/80-06/21/81</b>	<b>FY81</b>	<b>TOTAL \$9,248</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Wang, E Y</b>	<b>LERC/Curtis, H B</b>	<b>13-Physics</b>

NAG 3-112	Arizona State University	1096
Parallel-processor simulation systems		
<i>Period</i>	<i>Obligations</i>	
10/15/80-10/13/82	FY81	TOTAL \$64,218
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ogrady, E P	LERC/Krosel, S M	
		22-Computer Science
	LERC/Szuch, J R	

NAG 3-139		Arizona State University	1097
NASA-ASU internship program			
<i>Period</i>		<i>Obligations</i>	
12/22/80-06/21/82	FY81	\$25,000	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Wang, E Y	LERC/Weinberg, I		13-Physics
Backus, C			

NAG 3-167		Arizona State University		1098
An improved turbulence modeling for gas turbine combustors				
<i>Period</i>			<i>Obligations</i>	
06/01/81-05/31/83	FY81	\$50,000	TOTAL	\$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Mongia, H C	LERC/Warner, C J		46-Mech Engr	

<b>NAG 9-4</b>	<b>Arizona State University</b>	<b>1099</b>
<b>Matrix phases of carbonaceous chondrites</b>		
<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/82	FY81	TOTAL \$70,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Buscek, P R	JSC/Warner, J L	32-Geological Sci

NAGW 1		Arizona State University		1100
Planetary and Mars geomorphology				
Period	Obligations			
02/01/80-08/31/82	FY81 \$17,200	TOTAL	\$102,100	
Prin Invest	NASA Tech Officer	CASE Category		
Malin, M C	HQ-SL/Boyce, J M	32-Geological Sci		
	HQ-SL/Holt, H E			

<b>NAGW 24</b>	<b>Arizona State University</b>	<b>1101</b>
<b>Aggregate formation and aeolian action on Mars</b>		
<i>Period</i>	<i>Obligations</i>	
04/15/80-04/14/82	FY81 \$22,950	TOTAL \$39,950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schubert, G	HQ-SL/Boyce, J M	32-Geological Sci
Ernst, W G	HQ-SL/Holt, H E	

<b>NAGW 56</b>	<b>Arizona State University</b>	<b>1102</b>
<b>Impact cratering experiments</b>		
<i>Period</i>	<i>Obligations</i>	
04/01/80-09/30/81	FY81 \$4,526	TOTAL \$23,111
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greeley, R	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	



## NASA'S UNIVERSITY PROGRAM

### ARIZONA (Continued)

NAGW 132	Arizona State University	1103
Geological studies of the Galilean satellite		
<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$81,746	TOTAL \$81,746
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greeley, R	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

<b>NAGW 139</b>	<b>Arizona State University</b>	<b>1104</b>
<b>Galilean satellite geomorphology</b>		
<i>Period</i>		<i>Obligations</i>
<b>02/01/81-01/31/82</b>	<b>FY81 \$37,900</b>	<b>TOTAL \$37,900</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Malin, M</b>	<b>HQ-SL/Boyce, J M</b>	<b>32-Geological Sci</b>
	<b>HO-SL/Holt, H E</b>	

NAGW 143	Arizona State University	1105
Matrix phases of carbonaceous chondrites		
<i>Period</i>	<i>Obligations</i>	
02/15/81-02/14/82	FY81 \$76,936	TOTAL \$76,936
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Buseck, P R	HQ-SL/French, B M	32-Geological Sci
	HO-SL/Qaude, W L	

<b>NAGW 182</b>	<b>Arizona State University</b>	<b>1106</b>
<b>Phase equilibria in the</b>	<b>Martian mantle</b>	
<i>Period</i>	<i>Obligations</i>	
<b>04/01/81-03/31/82</b>	<b>FY81 \$48,496</b>	<b>TOTAL \$48,496</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Holloway, J R</b>	<b>HQ-SL/Quaide, W L</b>	<b>32-Geological Sci</b>
	<b>HO-SL/Boyce, J M</b>	

NAS 8-32357	Arizona State University	1107
Building and obstacles wakes		
<i>Period</i>	<i>Obligations</i>	
02/11/77-06/20/81	FY81	TOTAL \$99,783
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Logan, E, Jr	MSFC/Alexander, M B	31-Atmos Sci
	MSFC/Camp, D	

NAS 8-32937	Arizona State University	1108
The effect of a dispersed second phase on the ionic conductivity of solid state electrolytes		
Period	Obligations	
12/13/77-12/13/82	FY81	TOTAL \$201,500
Prin Invest	NASA Tech Officer	CASE Category
Wagner, J B	MSFC/Reeves, F A	47-Materials Engr
	MSFC/Rathz, T	

NAS 8-34318		Arizona State University		1109	
Research study		Building and obstacles wakes			
Period		Obligations			
08/25/81-08/24/82		FY81 \$13,000	TOTAL	\$13,000	
Prin Invest		NASA Tech Officer	CASE Category		
Logan, E. Jr		MSFC/Alexander, M B	31-Atmos Sci		

NCA 2-35001	Arizona State University	1110
Size-frequency analysis of simulated Martian aeolian silt and clay		
<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY81 \$20,926	TOTAL \$41,840
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Krinsley, D	ARC/Pollack, J B	32-Geological Sci
Greeley, R		

NGL 03-001-001	Arizona State University	1111
Development of improved procedures for sampling, characterizing and classifying meteorite specimens		
Period	Obligations	
04/16/63-02/28/82	FY81 \$27,982	TOTAL \$417,704
Prin Invest	NASA Tech Officer	CASE Category
Moore, C B	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	

NGT 03-001-800		Arizona State University	1112
Graduate student researchers program			
<i>Period</i>		<i>Obligations</i>	
06/01/80-05/31/82	FY81	\$11,860	TOTAL \$22,720
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Moore, C B	HQ-LC/Carter, C H		CASE Chemistry

NSG 2284	Arizona State University	1113
Aeolian geology studies		
<i>Period</i>	<i>Obligations</i>	
12/01/77-12/31/81	FY81 \$84,537	TOTAL \$166,293
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greeley, R	ARC/Pollack, J	19-Phys Sci, NEC

<b>NSG 3075</b>	<b>Arizona State University</b>	<b>1114</b>
Study of multiple jet array impingement heat transfer characteristics		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/75-11/26/81</b>	<b>FY81 \$75,000</b>	<b>TOTAL \$373,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Metzger, D E</b>	<b>LERC/Hippensteele, S A</b>	<b>41-Aero Engr</b>
<b>Florschwitz, L W</b>		

NSG 7040	Arizona State University	1115
The origin and early evolution of the solar system		
<i>Period</i>	<i>Obligations</i>	
04/01/74-02/28/82	FY81 \$66,561	TOTAL \$351,028
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Larimer, J W	HQ-SL/Franche, B M	32-Geological Sci
	HO-SL/Quaide, W L	

NSG 7255	Arizona State University	1116
The nature and origin of organic compounds in carbonaceous meteorites		
<i>Period</i>	<i>Obligations</i>	
06/14/76-01/31/82	FY81 \$59,000	TOTAL \$261,164
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cronin, J R	HQ-SB/Devincenzi, D L	
Yuen, G U		32-Geological Sci

## NASA'S UNIVERSITY PROGRAM ARIZONA (Continued)

NSG 7415	Arizona State University	1117
Geological studies in planetology		
Period	Obligations	
12/01/77-02/28/82	FY81 \$171,000	TOTAL \$815,596
Prin Invest	NASA Tech Officer	CASE Category
Greeley, R	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	
NSG 7429	Arizona State University	1118
Analysis of lunar Mare emplacement and impact cratering experiments		
Period	Obligations	
02/01/78-05/31/80	FY81	TOTAL \$68,354
Prin Invest	NASA Tech Officer	CASE Category
Greeley, R	HQ-SL/Dwornik, S E	32-Geological Sci
NSG 7548	Arizona State University	1119
Studies in Martian geology		
Period	Obligations	
03/01/79-09/30/81	FY81 \$129,951	TOTAL \$318,142
Prin Invest	NASA Tech Officer	CASE Category
Greeley, R	HQ-SL/Boyce, J M	31-Atmos Sci
	HQ-SL/Holt, H E	
NSG 7630	Arizona State University	1120
The effects of topography, albedo and thermal inertia variations on the generation of mesoscale Martian wind patterns		
Period	Obligations	
07/01/79-12/31/80	FY81	TOTAL \$42,205
Prin Invest	NASA Tech Officer	CASE Category
Rankin, R L	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Quaide, W L	
NSG 7642	Arizona State University	1121
Development of Martian terraced-ejeta deposits		
Period	Obligations	
10/01/79-02/28/81	FY81	TOTAL \$29,556
Prin Invest	NASA Tech Officer	CASE Category
Sheridan, M	HQ-SL/Dwornik, S E	32-Geological Sci
NSG 737	Navajo Community College	1122
To provide engineering services to implement software, on Navajo Community College PDP11-70 computer		
Period	Obligations	
08/21/79-10/20/79	FY81	TOTAL \$9,970
Prin Invest	NASA Tech Officer	CASE Category
Isher, S F	NSTL/Whitley, S L	49-Engr, NEC
NAG 1-141	University of Arizona	1123
Numerical study of large-eddy breakup and its effect on the drag characteristics on boundary layers		
Period	Obligations	
01/01/81-12/31/81	FY81 \$34,903	TOTAL \$34,903
Prin Invest	NASA Tech Officer	CASE Category
Kinney, R B	LARC/Harris, J E	41-Aero Engr
	LARC/Young, W H, Jr	
NAG 1-169	University of Arizona	1124
High temperature electronics		
Period	Obligations	
03/16/81-06/15/81	FY81 \$4,000	TOTAL \$4,000
Prin Invest	NASA Tech Officer	CASE Category
Hamilton, D J	LARC/Segura, R	99-Multi-Discip
NAG 2-52	University of Arizona	1125
The radial velocity search for extrasolar planets		
Period	Obligations	
10/01/80-11/30/81	FY81 \$66,559	TOTAL \$92,089
Prin Invest	NASA Tech Officer	CASE Category
Serkowski, K M	ARC/Black, D C	11-Astronomy
NAG 2-55	University of Arizona	1126
The study of star formation and molecular cloud evolution with the Kuiper Airborne Observatory		
Period	Obligations	
10/01/80-09/30/81	FY81 \$2,500	TOTAL \$18,000
Prin Invest	NASA Tech Officer	CASE Category
Thronson, H	ARC/Haughney, L C	11-Astronomy
NAG 2-64	University of Arizona	1127
Low temperature measurement of thermal expansion coefficient of mirror samples for shuttle infrared telescope facility (SIRTF)		
Period	Obligations	
09/01/80-09/30/81	FY81 \$17,000	TOTAL \$17,000
Prin Invest	NASA Tech Officer	CASE Category
Jacobs, S F	ARC/Hansen, Q M	19-Phys Sci, NEC
	ARC/Brooks, W F	
NAG 2-119	University of Arizona	1128
A review of Titan		
Period	Obligations	
06/01/81-11/30/81	FY81 \$10,457	TOTAL \$10,457
Prin Invest	NASA Tech Officer	CASE Category
Hunten, D M	ARC/Murphy, J P	31-Atmos Sci
	ARC/Cuzzi, J	
NAG 3-41	University of Arizona	1129
The application of probabilistic design theory to high temperature low cycle fatigue		
Period	Obligations	
06/01/80-05/30/82	FY81 \$38,996	TOTAL \$74,369
Prin Invest	NASA Tech Officer	CASE Category
Wirsching, P H	LERC/Thompson, R L	47-Materials Engr
NAG 3-45	University of Arizona	1130
NASA/Lewis Research Center computational structures apprenticeships		
Period	Obligations	
05/01/80-04/29/82	FY81 \$89,497	TOTAL \$155,110
Prin Invest	NASA Tech Officer	CASE Category
Gallagher, R H	LERC/Chamis, C C	41-Aero Engr
Kamel, H A	LERC/Johns, R H	
Heinrich, J C		

# NASA'S UNIVERSITY PROGRAM

## ARIZONA (Continued)

**NAG 5-34** University of Arizona 1131  
New seeing-limited studies of emission nebulae  
*Period* *Obligations*  
04/01/80-09/30/81 FY81 TOTAL \$14,791  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Craine, E R GSFC/Gull, T R 11-Astronomy

**NAG 5-38** University of Arizona 1132  
Study of the hottest white dwarfs from the Palomar-Green study  
*Period* *Obligations*  
04/01/80-09/30/82 FY81 \$7,000 TOTAL \$26,205  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Green, R F GSFC/Boggess, A 11-Astronomy  
Weymann, R J

**NAG 5-56** University of Arizona 1133  
Ultraviolet spectroscopy of heavy element abundances in the novae  
*Period* *Obligations*  
05/15/80-05/14/81 FY81 TOTAL \$2,995  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Williams, R E GSFC/Boggess, A 11-Astronomy

**NAG 5-57** University of Arizona 1134  
Evolution of the chromospheres transition regions in dwarf stars  
*Period* *Obligations*  
05/15/80-10/14/81 FY81 TOTAL \$7,972  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Giampapa, M S GSFC/Boggess, A 11-Astronomy  
Worden, S P

**NAG 5-76** University of Arizona 1135  
Study of an optical spectrometer to measure atmospheric composition from entry probes  
*Period* *Obligations*  
06/01/80-05/31/81 FY81 TOTAL \$10,003  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Tomasko, M G GSFC/Spencer, N W 31-Atmos Sci

**NAG 5-86** University of Arizona 1136  
Spectroscopic observations of comets  
*Period* *Obligations*  
07/01/80-10/31/81 FY81 TOTAL \$3,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Larson, S GSFC/Donn, B 11-Astronomy

**NAG 5-143** University of Arizona 1137  
Solar diameter measurements for study of Sun climate coupling  
*Period* *Obligations*  
06/01/81-05/31/82 FY81 \$28,000 TOTAL \$28,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hill, H A GSFC/Wolfe, C L 31-Atmos Sci

**NAG 5-196** University of Arizona 1138  
Spectroradiometric considerations for advanced land observation systems  
*Period* *Obligations*  
07/01/81-01/31/82 FY81 \$27,992 TOTAL \$27,992  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Slater, P N GSFC/Cressy, P J, Jr 13-Physics  
GSFC/Barker, J L

**NAG 8-321** University of Arizona 1139  
The X-ray properties of well-studied intermediate and large redshift quasi stellar objects A pilot study  
*Period* *Obligations*  
03/10/80-03/10/82 FY81 TOTAL \$4,076  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Strittmatter, P A MSFC/Jones, J B 11-Astronomy  
Smith, M G  
Condon, J J

**NAG 8-370** University of Arizona 1140  
The X-ray properties of close pairs of galaxies and low spectral resolution optical survey of the HEAO-B high resolution imager and imaging proportional counter fields  
*Period* *Obligations*  
08/15/80-08/15/82 FY81 TOTAL \$17,189  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Stoeck, J T MSFC/Stone, J F 11-Astronomy

**NAG 8-380** University of Arizona 1141  
Survey of bright (PG) quasars  
*Period* *Obligations*  
08/22/80-09/22/82 FY81 TOTAL \$8,623  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Green, R MSFC/Stone, J F 11-Astronomy

**NAG 8-387** University of Arizona 1142  
A search for an X-ray halo in Abell 2255  
*Period* *Obligations*  
12/08/80-12/07/81 FY81 \$3,849 TOTAL \$3,849  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Scott, J MSFC/Stone, J F 11-Astronomy  
Hintzen, P  
Nolman-sa Sofia, G D

**NAG 8-402** University of Arizona 1143  
Search for X-rays from knots in irregular galaxies  
*Period* *Obligations*  
06/15/81-06/07/82 FY81 \$6,292 TOTAL \$6,292  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Tapia, S MSFC/Stone, J F 11-Astronomy  
Lebofski, M J  
Charles, P

## NASA'S UNIVERSITY PROGRAM

### ARIZONA (Continued)

<b>NAG 8-403</b>	<b>University of Arizona</b>	<b>1144</b>
<b>Observations of very hot white dwarfs with Einstein</b>		
<i>Period</i>	<i>Obligations</i>	
06/15/81-06/07/82	FY81 \$3,575	<b>TOTAL \$3,575</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Liebert, J W	MSFC/Stone, J F	11-Astronomy
Green, R F		
Shipman, H L		

<b>NAG 8-408</b>	<b>University of Arizona</b>	<b>1145</b>
Near simultaneous observations of OVV quasars		
<i>Period</i>	<i>Obligations</i>	
06/18/81-06/17/82	FY81 \$1,788	TOTAL \$1,788
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Moore, R L	MSFC/Stone, J F	11-Astronomy
Stoeke, J T		
Green, R		

<b>NAGW 55</b>	<b>University of Arizona</b>	<b>1146</b>
<b>Absorption of sunlight in the atmosphere of Venus</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/80-04/30/82	FY81 \$35,065	TOTAL \$109,952
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tomasko, M	HO-SL/Brinton, H C	41-Aero Engr

<b>NAGW 67</b>	<b>University of Arizona</b>	<b>1147</b>
<b>Investigation of the chemical dynamics of the Venus atmosphere</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/80-05/31/82</b>	<b>FY81 \$34,002</b>	<b>TOTAL \$65,026</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Sil, G T</b>	<b>HQ-SL/Brinton, H C</b>	<b>31-Atmos Sci</b>
	<b>HQ-SL/Brunk, W E</b>	

<b>NAGW 121</b>	<b>University of Arizona</b>	<b>1148</b>
<b>A program of innovative research in optic and electro-optics for space astronomy</b>		
<i>Period</i>	<i>Obligations</i>	
<b>11/15/80-11/14/82</b>	<b>FY81 \$190,929</b>	<b>TOTAL \$190,929</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Angel, J R</b>	<b>HQ-SP/Taylor, T</b>	<b>11-Astronomy</b>
<b>Stockman, H S</b>	<b>HQ-SP/Heninger, L W</b>	
<b>Woolf, H J</b>		

<b>NAGW 124</b>	<b>University of Arizona</b>	<b>1149</b>
<b>Studies of X-ray clusters of galaxies</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/80-10/31/81	FY81 \$18,645	TOTAL \$18,645
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Scott, J S	HQ-SC/Mayr, H G	11-Astronomy
Holman, G D	HO-SC/Wiskerchen, M J	

<b>NAGW 134</b>	<b>University of Arizona</b>	<b>1150</b>
<b>The relaxation of craters in ice</b>		
<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$27,863	TOTAL \$27,863
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Woronow, A	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

<b>NAGW 135</b>	<b>University of Arizona</b>	<b>1151</b>
<b>Geologic investigations of Io, Ganymede and Callisto</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/01/81-01/31/82</b>	<b>FY81 \$38,644</b>	<b>TOTAL \$38,644</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Strom, R</b>	<b>HQ-SL/Boyce, J M</b>	<b>32-Geological Sci</b>
	<b>HQ-SL/Holt, H E</b>	

<b>NAGW 149</b>	<b>University of Arizona</b>	<b>1152</b>
<b>Support for preparation of planetary science and the lunar and planetary laboratory book on Venus</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/81-03/31/82</b>	<b>FY81 \$35,000</b>	<b>TOTAL \$35,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Hunten, D M</b>	<b>HQ-SL/Murphy, R E</b>	<b>31-Atmos Sci</b>
	<b>HQ-SL/Brunk, W E</b>	

NAGW 157	University of Arizona	1153
Study of the interaction of the Jovian magnetosphere with the rings and the Galilean satellites		
Period	Obligations	
03/15/81-03/14/82	FY81 \$30,000	TOTAL \$30,000
Prin Invest	NASA Tech Officer	CASE Category
Sonett, C P	HQ-SC/Mayr, H G	13-Physics
	HO-SC/Wiskerchen, M J	

NAGW 192	University of Arizona	1154
Higher-order gravity field at Jupiter		
<i>Period</i>	<i>Obligations</i>	
04/15/81-04/14/82	FY81 \$44,695	TOTAL \$44,695
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hubbard, W B	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/Mitz, A	

NAGW 220	University of Arizona	1155
Meteorite basalts		
<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$25,790	TOTAL \$25,790
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Drake, M J	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	

<b>NAGW 224</b>	<b>University of Arizona</b>	<b>1156</b>
<b>Speckle interferometry applied to asteroid and other solar system objects</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/01/81-07/31/82</b>	<b>FY81 \$37,449</b>	<b>TOTAL \$37,449</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Hege, E K</b>	<b>HQ-SL/Brunk, W E</b>	<b>11-Astronomy</b>
	<b>HQ-SL/Murphy, R E</b>	

NAGW 227	University of Arizona	1157
Skeletal muscle metabolism in hypokinetic rats		
<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$25,000	TOTAL \$25,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tischler, M	HQ-SB/Halstead, T W	51-Biological Sci

**NASA'S UNIVERSITY PROGRAM**  
**ARIZONA (Continued)**

**NAS 1-14332**                      **University of Arizona**                      **1158**  
 Stratospheric aerosol measurement experiment  
*Period*                                      *Obligations*  
 03/19/76-06/30/81                      **FY81**                      **TOTAL \$130,167**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Herman, B M                      LARC/McCormick, M P                      31-Atmos Sci  
    LARC/McMaster, L R

**NAS 5-25484**                      **University of Arizona**                      **1165**  
 Support to the space telescope wide field planetary camera  
 development team  
*Period*                                      *Obligations*  
 02/01/79-10/31/81                      **FY81 \$30,000**                      **TOTAL \$92,964**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Smith, B A                      GSFC/Sours, W T                      31-Atmos Sci

**NAS 1-14928**                      **University of Arizona**                      **1159**  
 Stratospheric aerosol and gas experiment  
*Period*                                      *Obligations*  
 07/21/77-06/30/81                      **FY81**                      **TOTAL \$60,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Herman, B M                      LARC/McMaster, L R                      31-Atmos Sci  
    LARC/McCormick, M P

**NAS 5-25733**                      **University of Arizona**                      **1166**  
 Space telescope/high resolution spectrograph (HRS) extragalactic  
 studies  
*Period*                                      *Obligations*  
 06/18/79-03/31/82                      **FY81**                      **TOTAL \$5,781**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Weymann, R J                      GSFC/Liberatore, F J                      11-Astronomy

**NAS 2-6265**                      **University of Arizona**                      **1160**  
 Imaging photopolarimeter experiment data analysis Pioneer 10  
 and 11  
*Period*                                      *Obligations*  
 11/01/70-03/31/82                      **FY81 \$194,450**                      **TOTAL \$2,557,629**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Gehrels, A M                      ARC/Hall, C F                      11-Astronomy  
 Dooe, L R                      ARC/Porter, D L

**NAS 5-25955**                      **University of Arizona**                      **1167**  
 Scientific activities of the high resolution ultraviolet spectrometer  
 and polarimeter for the Solar Maximum Mission  
*Period*                                      *Obligations*  
 11/14/79-02/28/82                      **FY81**                      **TOTAL \$12,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Beckers, J M                      GSFC/Kalet, M W                      11-Astronomy  
    GSFC/Woodgate, B E

**NAS 2-9487**                      **University of Arizona**                      **1161**  
 Pioneer Venus data analysis  
*Period*                                      *Obligations*  
 01/06/78-09/30/81                      **FY81 \$47,250**                      **TOTAL \$178,615**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Hunten, D M                      ARC/Fimmel, R O                      31-Atmos Sci  
    ARC/Dyer, J

**NAS 5-26575**                      **University of Arizona**                      **1168**  
 Development of a new class of liquid helium cooled Fabry Perot  
 interference filter  
*Period*                                      *Obligations*  
 04/29/81-11/29/82                      **FY81 \$42,000**                      **TOTAL \$42,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Low, F J                      GSFC/Arens, J F                      11-Astronomy  
 Nishimura, N                      GSFC/Heaney, J B

**NAS 2-10890**                      **University of Arizona**                      **1162**  
 Operation and maintenance of the NASA-owned 1.5 meter  
 telescope located at Mt Lemmon, Arizona  
*Period*                                      *Obligations*  
 01/01/81-12/31/81                      **FY81 \$98,727**                      **TOTAL \$98,727**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Larson, H P                      ARC/Haughney, L C                      11-Astronomy  
    ARC/Gillespie, C M

**NAS 8-31192**                      **University of Arizona**                      **1169**  
 Maintenance and operation of the 60' NASA telescope at Mt  
 Lemmon  
*Period*                                      *Obligations*  
 10/01/74-12/31/79                      **FY81**                      **TOTAL \$374,207**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      MSFC/Parnell, T A                      11-Astronomy  
    MSFC/Bass, B G

**NAS 2-10903**                      **University of Arizona**                      **1163**  
 Mirror technology development  
*Period*                                      *Obligations*  
 03/02/81-09/15/81                      **FY81 \$48,000**                      **TOTAL \$48,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Parks, R E                      ARC/Hansen, Q M                      42-Astro Engr  
    ARC/Melugin, R K

**NAS 8-31948**                      **University of Arizona**                      **1170**  
 Automated analytical electrophoresis apparatus  
*Period*                                      *Obligations*  
 05/17/76-06/30/81                      **FY81**                      **TOTAL \$299,305**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Bartels, P H                      MSFC/Snyder, R S                      59-Life Sci, NEC  
    MSFC/Nerren, B H

**NAS 5-24308**                      **University of Arizona**                      **1164**  
 Study of suitability of Starlab for solar system studies  
*Period*                                      *Obligations*  
 09/27/77-06/30/81                      **FY81**                      **TOTAL \$17,585**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Smith, B A                      GSFC/Eirand, A M                      11-Astronomy

**NAS 8-32950**                      **University of Arizona**                      **1171**  
 Hormone purification by isoelectric focusing in space  
*Period*                                      *Obligations*  
 03/29/78-03/28/82                      **FY81 \$85,000**                      **TOTAL \$307,800**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Bier, M                      MSFC/Williams, J R                      59-Life Sci, NEC



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<b>NAS 8-33718</b>			<b>University of Arizona</b>			<b>1172</b>
Lightning detection from space						
<i>Period</i>		<i>Obligations</i>				
02/11/80-09/30/81	FY81	TOTAL \$40,000				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Krider, P	MSFC/Wagnon, F W	49-Engr, NEC				
	MSFC/Harper, J W					
<b>NAS 8-33720</b>			<b>University of Arizona</b>			<b>1173</b>
Conceptual design study of lightning optical/sensor systems						
<i>Period</i>		<i>Obligations</i>				
02/07/80-10/31/81	FY81 \$86,665	TOTAL \$126,525				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Wolfe, W L	MSFC/Barnes, T G	49-Engr, NEC				
	MSFC/Reinbolt, E J					
<b>NAS 8-33732</b>			<b>University of Arizona</b>			<b>1174</b>
Maintenance and operation of the 60 inch NASA telescope						
<i>Period</i>		<i>Obligations</i>				
01/02/80-01/01/81	FY81 \$9,647	TOTAL \$96,047				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Larson, H P	MSFC/Fishman, G J	11-Astronomy				
	MSFC/Parnell, T A					
<b>NAS 8-33815</b>			<b>University of Arizona</b>			<b>1175</b>
Computer studies of baroclinic stability in spherical geometry						
<i>Period</i>		<i>Obligations</i>				
03/07/80-03/06/82	FY81 \$24,625	TOTAL \$49,185				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Gall, R L	MSFC/Fowles, W W	31-Atmos Sci				
	MSFC/Fitchl, G H					
<b>NAS 9-16268</b>			<b>University of Arizona</b>			<b>1176</b>
Study of cellular immune response						
<i>Period</i>		<i>Obligations</i>				
02/01/81-02/28/82	FY81 \$42,000	TOTAL \$42,000				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Criswell, B S	JSC/Taylor, G R	56-Medical Sciences				
<b>NASW 3262</b>			<b>University of Arizona</b>			<b>1177</b>
Colloquium and book on asteroids and planets						
<i>Period</i>		<i>Obligations</i>				
04/23/79-03/30/80	FY81	TOTAL \$14,700				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Gehrels, A M	HQ-SL/Brunk, W E	11-Astronomy				
<b>NASW 3413</b>			<b>University of Arizona</b>			<b>1178</b>
Colloquium and book on comets						
<i>Period</i>		<i>Obligations</i>				
11/01/80-10/31/81	FY81	TOTAL \$15,267				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Wilkening, L L	HQ-SL/Brunk, W E	11-Astronomy				
	HQ-SL/Murphy, R E					
<b>NASW 3454</b>			<b>University of Arizona</b>			<b>1179</b>
Design study for a scanning facility for Earth crossing asteroids						
<i>Period</i>		<i>Obligations</i>				
10/16/80-12/15/81	FY81 \$395,158	TOTAL \$395,158				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Gehrels, T	HQ-SL/Brunk, W E	11-Astronomy				
	HQ-SL/Murphy, R E					
<b>NAS10-8518</b>			<b>University of Arizona</b>			<b>1180</b>
Thunderstorm electrical field changes and associated meteorological conditions at KSC						
<i>Period</i>		<i>Obligations</i>				
02/12/74-03/01/81	FY81	TOTAL \$191,600				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Krider, E P	KSC/Jafferis, W	31-Atmos Sci				
<b>NAS10-10082</b>			<b>University of Arizona</b>			<b>1181</b>
Thunderstorm research using KSC-USAF electric field measuring system and its operational utilization at KSC						
<i>Period</i>		<i>Obligations</i>				
03/01/81-02/28/82	FY81 \$45,030	TOTAL \$45,030				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Krider, E P	KSC/Dietz, W R	31-Atmos Sci				
<b>NAS13-172</b>			<b>University of Arizona</b>			<b>1182</b>
Environmental sampling for monitoring desertification indicators						
<i>Period</i>		<i>Obligations</i>				
03/16/81-03/15/82	FY81 \$24,876	TOTAL \$24,876				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Hutchinson, C F	NSTL/Musick, H B	39-Env Sci, NEC				
<b>NCA 2-40101</b>			<b>University of Arizona</b>			<b>1183</b>
Optimization of a cryogenic grating spectrometer						
<i>Period</i>		<i>Obligations</i>				
05/01/81-04/30/82	FY81 \$8,709	TOTAL \$8,709				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Thompson, R I	ARC/Erickson, E F	11-Astronomy				
<b>NGL 03-002-002</b>			<b>University of Arizona</b>			<b>1184</b>
Planetary, spectroscopic, selenodetic and physical studies of lunar surface						
<i>Period</i>		<i>Obligations</i>				
08/12/61-05/31/82	FY81 \$93,050	TOTAL \$2,947,495				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Smith, J C	HQ-SL/Brunk, W E	11-Astronomy				
	HQ-SL/Murphy, R E					
<b>NGL 03-002-019</b>			<b>University of Arizona</b>			<b>1185</b>
High resolution electron microscopic techniques to study biological material						
<i>Period</i>		<i>Obligations</i>				
06/07/63-08/31/79	FY81	TOTAL \$471,055				
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>				
Hoening, S A	HQ-SL/Fellows, R F	31-Atmos Sci				
	HQ-SL/Brunk, W E					

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<b>NGL 03-002-081</b>	<b>University of Arizona</b>	<b>1186</b>
<b>Photometry and polarimetry of minor planets</b>		
<i>Period</i>	<i>Obligations</i>	
03/14/66-10/31/81	FY81 \$39,577	TOTAL \$548,802
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gehrels, T	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

NGL 03-002-313	University of Arizona	1187
Remote sensing applications for state and local government		
<i>Period</i>	<i>Obligations</i>	
03/07/72-02/28/83	FY81 \$125,000	TOTAL \$1,100,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, J D	HQ-ET/Vitale, J A	39-Env Sci, NEC

<b>NGR 03-002-107</b>	<b>University of Arizona</b>	<b>1188</b>
<b>Basic research in astrophysics and space science</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/67-09/30/82</b>	<b>FY81 \$80,000</b>	<b>TOTAL \$758,063</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Hsieh, K C</b>	<b>HQ-SC/Mayr, H G</b>	<b>13-Physics</b>
	<b>HQ-SC/Schmerling, E R</b>	

<b>NGR 03-002-171</b>	<b>University of Arizona</b>	<b>1189</b>
<b>Analysis of carbonaceous meteorites</b>		
<i>Period</i>	<i>Obligations</i>	
10/26/68-10/31/81	FY81 \$50,000	<b>TOTAL \$688,884</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nagy, B	HQ-SB/Devincenzi, D	L
Nagy, L A		32-Geological Sci

NGR 03-002-219	University of Arizona	1190
Photopolarimetry of Mercury, Mars, and satellites		
Period	Obligations	
02/13/70-10/31/81	FY81 \$37,284	TOTAL \$424,519
Prin Invest	NASA Tech Officer	CASE Category
Gehrels, A M	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

NGR 03-002-269	University of Arizona	1191
Operation of a 30 cm flying infrared telescope		
<i>Period</i>	<i>Obligations</i>	
05/04/71-07/30/83	FY81 \$149,174	TOTAL \$788,510
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Low, F J	HQ-SC/Bogges, N B	11-Astronomy
	HQ-SC/Weiler, E J	

NGR 03-002-332	University of Arizona	1192
Infrared spectroscopy of the planets from 1-5.6 micron with the medium-resolution LPL Fourier interferometer		
<i>Period</i>	<i>Obligations</i>	
03/05/73-10/31/81	FY81 \$111,504	TOTAL \$736,861
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Larson, H P	ARC/Haughney, L C	11-Astronomy

<b>NGR 03-002-370</b>	<b>University of Arizona</b>	<b>1193</b>
An investigation of electromagnetic processes in the early solar system with bearing on thermal evolution and fossil magnetism		
<i>Period</i>	<i>Obligations</i>	
10/01/73-12/31/81	FY81 \$51,469	TOTAL \$329,726
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sonett, C P	HQ-SL/Quaide, W. L	32-Geological Sci
	HQ-SL/French, B M	

NGR 03-002-371	University of Arizona	1194
Far infrared observations of galactic and extra-galactic sources of radiation		
Period	Obligations	
09/01/73-11/30/81	FY81 \$90,000	TOTAL \$540,000
Prin Invest	NASA Tech Officer	CASE Category
Hoffman, W	HQ-SC/Bogges, N W	11-Astronomy
	HQ-SC/Weiler, E J	

NGT 03-002-800		University of Arizona		1195
Graduate student training program in computational fluid dynamics				
Period		Obligations		
07/01/80-05/31/82	FY81	\$99,983	TOTAL	\$174,682
Prin Invest	NASA Tech	Officer	CASE Category	
Fung, K Y	HQ-RT/Graves, R A		41-Aero Engr	
	HQ-LC/Carter, C H			

NSG 2381	University of Arizona	1196
Cytofluorometric analysis of viral infection		
<i>Period</i>	<i>Obligations</i>	
05/01/79-01/31/82	FY81 \$35,000	TOTAL \$96,356
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meinke, W J	ARC/Mandel, A D	56-Medical Sciences

NSG 5023		University of Arizona		1197	
Lightning detection study					
Period		Obligations			
09/01/74-06/30/81		FY81		TOTAL \$56,500	
Prin Invest		NASA Tech Officer		CASE Category	
Ragsdell, K M		GSFC/Le Vine, D M		31-Atmos Sci	
Thompson, H D					

NSG 5235	University of Arizona	1198
Research of the ultraviolet spectra of T Tauri and related stars		
<i>Period</i>	<i>Obligations</i>	
02/19/78-10/31/81	FY81 \$6,000	TOTAL \$20,163
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Imhoff, C L	GSFC/Bogges, A	11-Astronomy
Giampapa, M S		

NSG 5249	University of Arizona	1199
Spectrophotometry of planets, satellites and asteroids		
<i>Period</i>	<i>Obligations</i>	
03/01/78-07/31/80	FY81	TOTAL \$29,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tomasko, M G	GSFC/Boggess, A	11-Astronomy
Zellner, B H	GSFC/West, D K	
Gehrels, A M		

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<b>NSG 7011</b>	<b>University of Arizona</b>	<b>1200</b>	
Radiation history of meteorites			
<i>Period</i>	<i>Obligations</i>		
03/01/74-02/28/82	FY81 \$47,000 TOTAL \$304,882		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Wilkening, L L	HQ-SL/French, B M	32-Geological Sci	
	HQ-SL/Quaide, W L		
<b>NSG 7020</b>	<b>University of Arizona</b>	<b>1201</b>	
Investigation of lunar induced and permanent magnetism in the lunar data analysis and synthesis program			
<i>Period</i>	<i>Obligations</i>		
03/01/74-01/31/82	FY81 \$98,108 TOTAL \$792,143		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Sonett, C P	HQ-SL/Quaide, W L	32-Geological Sci	
	HQ-SL/French, B E		
<b>NSG 7024</b>	<b>University of Arizona</b>	<b>1202</b>	
Study of the Earth's magnetosphere and solar wind			
<i>Period</i>	<i>Obligations</i>		
02/01/74-10/30/81	FY81 \$120,000 TOTAL \$559,665		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Sonett, C P	HQ-SC/Mayr, H G	13-Physics	
	HQ-SC/Schmerling, E R		
<b>NSG 7045</b>	<b>University of Arizona</b>	<b>1203</b>	
Interiors of the giant planets			
<i>Period</i>	<i>Obligations</i>		
04/01/74-03/31/82	FY81 \$35,750 TOTAL \$269,944		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Hubbard, W B	HQ-SL/Brunk, W E	11-Astronomy	
	HQ-SL/Murphy, R E		
<b>NSG 7070</b>	<b>University of Arizona</b>	<b>1204</b>	
Planetary spectroscopy			
<i>Period</i>	<i>Obligations</i>		
06/01/74-05/30/82	FY81 \$119,292 TOTAL \$758,777		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Fink, U W	HQ-SL/Brunk, W E	11-Astronomy	
	HQ-SL/Murphy, R E		
<b>NSG 7101</b>	<b>University of Arizona</b>	<b>1205</b>	
Study structure of astrophysical plasma and turbulent fluctuations			
<i>Period</i>	<i>Obligations</i>		
11/18/74-08/31/81	FY81 TOTAL \$333,192		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Jokipii, J R	HQ-SC/Gilman, D A	11-Astronomy	
	HQ-SC/Holt, S S		
<b>NSG 7114</b>	<b>University of Arizona</b>	<b>1206</b>	
Infrared observations of the planets			
<i>Period</i>	<i>Obligations</i>		
02/20/75-05/31/82	FY81 \$34,800 TOTAL \$161,621		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Rieke, G H	HQ-SL/Brunk, W E	11-Astronomy	
	HQ-SL/Murphy, R E		
<b>NSG 7146</b>	<b>University of Arizona</b>	<b>1207</b>	
Geologic investigation of Mercury from Mariner 10 television data			
<i>Period</i>	<i>Obligations</i>		
07/01/75-01/30/82	FY81 \$62,000 TOTAL \$401,482		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Strom, R G	HQ-SL/Boyce, J M	32-Geological Sci	
	HQ-SL/Holt, H E		
<b>NSG 7249</b>	<b>University of Arizona</b>	<b>1208</b>	
High precision polarimetry of meteorites			
<i>Period</i>	<i>Obligations</i>		
07/01/76-07/31/82	FY81 \$29,992 TOTAL \$178,889		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Zellner, B H	HQ-SL/French, B M	32-Geological Sci	
	HQ-SL/Quaide, W L		
<b>NSG 7333</b>	<b>University of Arizona</b>	<b>1209</b>	
Study of isoelectric focusing for proteins and peptide hormones in a microgravity environment			
<i>Period</i>	<i>Obligations</i>		
04/01/79-03/31/84	FY81 \$224,967 TOTAL \$1,149,967		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bier, M	HQ-ET/Vitale, J A	59-Life Sci, NEC	
<b>NSG 7368</b>	<b>University of Arizona</b>	<b>1210</b>	
A deep near infrared photographic sky survey as a support tool for the infra-red astronomical satellite			
<i>Period</i>	<i>Obligations</i>		
06/15/77-06/14/82	FY81 \$30,974 TOTAL \$138,699		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Crane, E R	HQ-SC/Bogess, N W	11-Astronomy	
	HQ-SC/Weiler, E J		
<b>NSG 7374</b>	<b>University of Arizona</b>	<b>1211</b>	
Evaluation of a field-ionization neutral mass spectrometer for possible comet fly-by missions in 1980's			
<i>Period</i>	<i>Obligations</i>		
08/01/77-03/31/80	FY81 TOTAL \$65,006		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Hsieh, K C	HQ-SL/Murphy, R E	11-Astronomy	
<b>NSG 7419</b>	<b>University of Arizona</b>	<b>1212</b>	
Generation and behavior of solar system magnetic fields			
<i>Period</i>	<i>Obligations</i>		
03/01/79-06/30/82	FY81 \$51,095 TOTAL \$155,085		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Levy, E H	HQ-SL/Quaide, W L	32-Geological Sci	
	HQ-SL/French, B M		
<b>NSG 7436</b>	<b>University of Arizona</b>	<b>1213</b>	
Rare earths in inclusions from different classes of carbonaceous chondrites			
<i>Period</i>	<i>Obligations</i>		
03/01/78-03/14/82	FY81 \$141,229 TOTAL \$230,466		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Boynton, W V	HQ-SL/French, B M	32-Geological Sci	
	HQ-SL/Quaide, W L		

## NASA'S UNIVERSITY PROGRAM ARIZONA (Continued)

NSG 7485	University of Arizona	1214
Stratospheric aeronomy		
<i>Period</i>	<i>Obligations</i>	
09/01/78-08/31/81	FY81 \$53,304	TOTAL \$165,576
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hunton, D M	HQ-EB/Watson, R T	31-Atmos Sci
	HQ-EB/Chandra, S	

NSG 7502	University of Arizona	1215
Asteroid population statistics		
<i>Period</i>	<i>Obligations</i>	
09/01/78-08/31/82	FY81	TOTAL \$81,561
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zellner, B H	HQ-SL/Brunk, W E	11-Astronomy
Tedesco, E F	HQ-SL/Brinton, H C	

NSG 7544	University of Arizona	1216
Martian landforms response to geologic setting		
<i>Period</i>	<i>Obligations</i>	
04/01/79-01/31/82	FY81 \$20,000	TOTAL \$75,999
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Woronow, A	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

NSG 7558	University of Arizona	1217
Planetary aeronomy and related studies		
<i>Period</i>	<i>Obligations</i>	
04/01/79-03/31/82	FY81 \$35,400	TOTAL \$89,659
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hunten, D M	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

NSG 7573	University of Arizona	1218
Scattering of light by amonia crystals		
<i>Period</i>	<i>Obligations</i>	
09/01/78-08/31/82	FY81 \$55,000	TOTAL \$158,552
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tomasko, M G	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

<b>NSG 7574</b>	<b>University of Arizona</b>	<b>1219</b>
<b>Optical photometry and polarimetry and confirmed counterparts for X-ray binary pulsars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/79-04/30/81</b>	<b>FY81</b>	<b>TOTAL \$45,321</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Tapia, S F</b>	<b>HQ-SC/Weiler, E J</b>	<b>11-Astronomy</b>
	<b>HQ-SC/Boggess, N W</b>	

NSG 7576	University of Arizona	1220
Geochemical evolution of the Moon and igneous meteorites		
<i>Period</i>	<i>Obligations</i>	
05/01/79-01/31/82	FY81 \$98,918	TOTAL \$255,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Drake, M J	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

NSG 7577	University of Arizona	1221
Terrestrial analog studies of relationships		
Period	Obligations	
03/01/79-10/31/81	FY81 \$21,880	TOTAL \$107,333
Prin Invest	NASA Tech Officer	CASE Category
Drake, M J	HQ-SL/Quaide, W L	32-Geological Sci

NSG 7607	University of Arizona	1222
Laboratory infrared reflectance studies		
<i>Period</i>	<i>Obligations</i>	
05/01/79-04/30/82	FY81 \$22,076	TOTAL \$62,612
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lebofsky, L	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

NSG 7634	University of Arizona	1223
Studies of planetary extended atmospheres		
<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/82	FY81 \$74,543	TOTAL \$212,652
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brown, R A	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

## ARKANSAS

NSG 3249	Arkansas State University	1224
Vaporization thermodynamics of potassium sulfide and potassium sulfite		
<i>Period</i>	<i>Obligations</i>	
03/15/79-11/30/81	FY81	TOTAL \$58,798
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bennett, J E	LERC/Kohl, F J	12-Chemistry
	LERC/Stearns, C A	

NAG 5-20		University of Arkansas - Fayetteville		1225
Measurement of soil moisture using remote sensing multisensor transfer techniques				
Period			Obligations	
03/01/80-05/31/82		FY81 \$70,000	TOTAL	\$125,000
Prin Invest		NASA Tech Officer		CASE Category
Waite, W P		GSFC/Schmugge, T	39-Env Sci, NEC	
Scott, D		GSFC/O'Neill, P E		

NAG 9-3		University of Arkansas - Fayetteville		1226
Analysis of geological terrain models for determination of optimum SAR sensor configuration and optimum information extraction for exploration of global non-renewable resources				
Period		Obligations		
01/21/80-01/20/82		FY81	\$120,000	TOTAL \$180,000
Pnn Invest		NASA Tech Officer		CASE Category
MacDonald, H C		JSC/Duke, M B		32-Geological Sci

**NASA'S UNIVERSITY PROGRAM**  
**ARKANSAS (Continued)**

**NAS 8-33224**      **University of Arkansas - Fayetteville**      **1227**  
 Space Shuttle environmental analysis statistical models  
*Period*      *Obligations*  
 05/07/79-08/31/81      **FY81**      **TOTAL \$27,699**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Tubbs, J D      MSFC/Smith, O E      31-Atmos Sci  
                                  MSFC/Brown, S C

**NAS 8-34502**      **University of Arkansas - Fayetteville**      **1228**  
 Ascent winds  
*Period*      *Obligations*  
 07/24/81-07/23/83      **FY81 \$20,000**      **TOTAL \$20,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Tubbs, J D      MSFC/Smith, O E      31-Atmos Sci  
                                  MSFC/Brown, S C

**NGL 04-001-007**      **University of Arkansas - Fayetteville**      **1229**  
 Application of lasers to instrumentation and measurement techniques  
*Period*      *Obligations*  
 08/01/81-11/30/81      **FY81 \$2,384**      **TOTAL \$454,857**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Mazumder, M K      ARC/Ragent, B      41-Aero Engr

**CALIFORNIA**

**NAG 1-71**      **California Institute of Technology**      **1230**  
 Development of mathematical techniques for assimilation of remote sensing data into atmospheric models  
*Period*      *Obligations*  
 06/01/80-11/30/81      **FY81**      **TOTAL \$43,026**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Seinfeld, J H      LARC/McDougal, D S      31-Atmos Sci  
 Koda, M  
 Omatu, S

**NAG 2-1**      **California Institute of Technology**      **1231**  
 Submillimeter line astronomy on the NASA 91.5 cm airborne telescope  
*Period*      *Obligations*  
 10/01/79-09/30/82      **FY81 \$104,625**      **TOTAL \$164,676**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Phillips, T G      ARC/Haughney, L C      11-Astronomy

**NAG 2-125**      **California Institute of Technology**      **1232**  
 An experimental study of surface precision limits for machined-panel submillimeter dishes  
*Period*      *Obligations*  
 07/15/81-01/14/82      **FY81 \$34,272**      **TOTAL \$34,272**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Leighton, R B      ARC/Werner, M W      11-Astronomy  
                                  ARC/Pochani, T R

**NAG 3-70**      **California Institute of Technology**      **1233**  
 Non-steady combustion in burners for aircraft gas turbines  
*Period*      *Obligations*  
 06/09/80-09/07/82      **FY81 \$55,000**      **TOTAL \$105,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Marble, F E      LERC/Tacina, R      41-Aero Engr  
 Zokoski, E E  
 Kubota, T

**NAG 3-179**      **California Institute of Technology**      **1234**  
 Instability of nonuniform flows  
*Period*      *Obligations*  
 08/01/81-07/31/82      **FY81 \$68,654**      **TOTAL \$68,654**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Saffman, P G      LERC/Durbin, P A      29-Math Computer Sci, NEC

**NAG 5-4**      **California Institute of Technology**      **1235**  
 Research on long exposure observations of extragalactic objects  
*Period*      *Obligations*  
 03/01/80-01/31/82      **FY81 \$5,984**      **TOTAL \$32,184**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Sargent, W L      GSFC/Boggess, A      11-Astronomy  
 Malkan, M

**NAG 5-47**      **California Institute of Technology**      **1236**  
 Observations of emission in bright, low redshift quasars  
*Period*      *Obligations*  
 04/28/80-05/27/82      **FY81 \$11,300**      **TOTAL \$21,300**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Soifer, B T      GSFC/Boggess, A      11-Astronomy

**NAG 5-66**      **California Institute of Technology**      **1237**  
 Observations of selected Jovian atmospheric features  
*Period*      *Obligations*  
 05/26/80-11/30/81      **FY81 \$13,000**      **TOTAL \$22,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Trauger, J T      GSFC/Boggess, A      11-Astronomy

**NAG 5-68**      **California Institute of Technology**      **1238**  
 Research of the stellar population of normal galaxies  
*Period*      *Obligations*  
 06/01/80-05/31/82      **FY81 \$19,600**      **TOTAL \$28,600**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Cohen, J G      GSFC/Boggess, A      11-Astronomy

**NAG 8-304**      **California Institute of Technology**      **1239**  
 Investigation of stellar chromospheric and coronal activity  
*Period*      *Obligations*  
 01/28/80-01/27/81      **FY81**      **TOTAL \$10,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Zirni, H      MSFC/Jones, J B      11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAG 8-313** California Institute of Technology **1240**  
Investigation of stellar chromospheric and coronal activity  
*Period* *Obligations*  
03/01/80-02/28/81 FY81 TOTAL \$1,728  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Zirin, H MSFC/Jones, J B 11-Astronomy

**NAG 8-322** California Institute of Technology **1241**  
X-ray observations of T Tauri stars  
*Period* *Obligations*  
03/20/80-03/19/81 FY81 TOTAL \$1,512  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Decampli, W D MSFC/Jones, J B 11-Astronomy

**NAG 8-324** California Institute of Technology **1242**  
Determine location of High Energy Astronomical Observatory-A2  
soft X-ray sources, mapping kilo electron volts diffuse features  
near galactic center  
*Period* *Obligations*  
01/15/80-10/31/81 FY81 TOTAL \$15,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Garmire, G P MSFC/Jones, J B 11-Astronomy

**NAG 8-374** California Institute of Technology **1243**  
A hot nearby white dwarf, identifying the bright soft X-ray sources  
found by HEAO-1, HRI observe of the point source in RCW  
103, find brightest soft X-ray cataclysmic variables in quiescence  
*Period* *Obligations*  
09/15/80-09/14/81 FY81 TOTAL \$20,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Garmire, G MSFC/Stone, J F 11-Astronomy

**NAG 8-376** California Institute of Technology **1244**  
IPC observations of interstellar bullets and IPC observations of  
a new type of extragalactic object found at infrared wavelengths  
*Period* *Obligations*  
09/22/80-09/21/81 FY81 TOTAL \$10,210  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Pravdo, S H MSFC/Stone, J F 11-Astronomy

**NAG 8-406** California Institute of Technology **1245**  
HEAO observing time and support of research Coordinated  
infrared, optical, ultraviolet, and X-ray observations of high-  
redshift quasars  
*Period* *Obligations*  
06/15/81-06/07/82 FY81 \$7,612 TOTAL \$7,612  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sargent, W L MSFC/Stone, J F 11-Astronomy  
Malkan, M

**NAG 8-412** California Institute of Technology **1246**  
A search for gamma-ray lines from the Virgo cluster  
*Period* *Obligations*  
07/15/81-01/14/82 FY81 \$9,482 TOTAL \$9,482  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Prince, T A MSFC/Stone, J F 11-Astronomy

**NAGW 58** California Institute of Technology **1247**  
Dynamics of planetary atmospheres  
*Period* *Obligations*  
05/01/80-04/30/82 FY81 \$98,128 TOTAL \$183,928  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Ingersoll, A P HQ-SL/Murphy, R E 31-Atmos Sci  
HQ-SL/Brunk, W E

**NAGW 107** California Institute of Technology **1248**  
Development of InSb detectors for submillimeter astronomy  
*Period* *Obligations*  
11/01/80-10/31/82 FY81 \$179,047 TOTAL \$179,047  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Phillips, T HQ-SC/Bogges, N W 11-Astronomy  
HQ-SC/Weiler, E J

**NAGW 138** California Institute of Technology **1249**  
Crustal evolution of Ganymede and Callisto  
*Period* *Obligations*  
01/15/81-01/14/82 FY81 \$21,332 TOTAL \$21,332  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Shoemaker, E M HQ-SL/Boyce, J M 32-Geological Sci  
HQ-SL/Holt, H E

**NAGW 148** California Institute of Technology **1250**  
Physical and chemical properties of the outer micron of planetary  
materials  
*Period* *Obligations*  
03/01/81-02/28/82 FY81 \$90,100 TOTAL \$90,100  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Tombrello, T A HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/French, B M

**NAGW 159** California Institute of Technology **1251**  
Measurement of Jovian winds from Voyager images  
*Period* *Obligations*  
03/15/81-03/14/82 FY81 \$47,834 TOTAL \$47,834  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Ingersoll, A P HQ-SL/Brinton, H C 13-Physics  
HQ-SL/Brunk, W E

**NAGW 185** California Institute of Technology **1252**  
High pressure cosmochemistry applied to major planetary  
interiors  
*Period* *Obligations*  
04/01/81-09/30/81 FY81 \$14,993 TOTAL \$14,993  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Stevenson, D J HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/French, B M

**NAGW 200** California Institute of Technology **1253**  
Studies of the composition at solar energetic particles  
*Period* *Obligations*  
05/15/81-01/14/82 FY81 \$47,998 TOTAL \$47,998  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Stone, E C HQ-SL/Quaide, W E 32-Geological Sci  
HQ-SL/Mitz, M A

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAGW 202 California Institute of Technology 1254**  
Sputtering processes near Jupiter and Saturn  
*Period Obligations*  
05/15/81-05/14/82 FY81 \$80,000 TOTAL \$80,000  
*Prin Invest NASA Tech Officer CASE Category*  
Haff, P K HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/Mitz, M A

**NAGW 205 California Institute of Technology 1255**  
Isentropic compression and decompression of outer solar system molecular materials  
*Period Obligations*  
06/01/81-05/31/82 FY81 \$96,086 TOTAL \$96,086  
*Prin Invest NASA Tech Officer CASE Category*  
Ahrens, T J HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/French, B M

**NAGW 223 California Institute of Technology 1256**  
Sources sinks and variability of Mar's atmospheric water vapor  
*Period Obligations*  
07/01/81-09/30/82 FY81 \$50,723 TOTAL \$50,723  
*Prin Invest NASA Tech Officer CASE Category*  
Farmer, C B HQ-SL/Murphy, R E 31-Atmos Sci

**NAS 1-15668 California Institute of Technology 1257**  
Aerodynamics of the Wright 1903 flyer  
*Period Obligations*  
01/18/79-03/31/80 FY81 TOTAL \$11,930  
*Prin Invest NASA Tech Officer CASE Category*  
Culick, F E LARC/Houbolt, J C 41-Aero Engr

**NAS 2-6556 California Institute of Technology 1258**  
Pioneer 10 and 11 data analysis of the Jovian infrared thermal structures experiment  
*Period Obligations*  
09/17/71-09/30/81 FY81 \$4,193 TOTAL \$253,742  
*Prin Invest NASA Tech Officer CASE Category*  
Ingersoll, A P ARC/Fimmel, R O 11-Astronomy  
ARC/Dyer, J W

**NAS 5-20721 California Institute of Technology 1259**  
High energy cosmic rays experiment for international Sun Earth Explorer spacecraft  
*Period Obligations*  
02/07/75-06/30/82 FY81 \$131,700 TOTAL \$1,837,700  
*Prin Invest NASA Tech Officer CASE Category*  
Stone, E C GSFC/Corrigan, J P 13-Physics

**NAS 5-22965 California Institute of Technology 1260**  
Nimbus G Earth radiation budget sensor support  
*Period Obligations*  
01/27/76-09/30/81 FY81 TOTAL \$117,591  
*Prin Invest NASA Tech Officer CASE Category*  
Ingersoll, A P GSFC/Patterson, G 31-Atmos Sci

**NAS 5-25049 California Institute of Technology 1261**  
HEAO A-2 cosmic X-ray experiment mission support and data analysis support  
*Period Obligations*  
08/13/78-03/31/82 FY81 \$232,958 TOTAL \$837,958  
*Prin Invest NASA Tech Officer CASE Category*  
Garmire, G P GSFC/Wende, C D 13-Physics

**NAS 5-25451 California Institute of Technology 1262**  
Wide field/planetary camera for space telescope  
*Period Obligations*  
01/01/79-01/31/85 FY81 \$805,000 TOTAL \$2,250,936  
*Prin Invest NASA Tech Officer CASE Category*  
Westphal, J GSFC/Sours, W P 11-Astronomy

**NAS 5-25789 California Institute of Technology 1263**  
Data reduction and analysis of interplanetary monitoring platform (IMP) electron isotope spectrometer experiment  
*Period Obligations*  
03/24/80-09/30/82 FY81 \$77,944 TOTAL \$162,702  
*Prin Invest NASA Tech Officer CASE Category*  
Stone, E C GSFC/Gemmell, J D 11-Astronomy

**NAS 8-27978 California Institute of Technology 1264**  
Design, development and operation of the ACR-7 heavy nuclei experiment under the HEAO program  
*Period Obligations*  
06/23/72-09/30/82 FY81 \$203,000 TOTAL \$1,153,192  
*Prin Invest NASA Tech Officer CASE Category*  
Stone, E C MSFC/Stone, J F 11-Astronomy

**NAS 8-29313 California Institute of Technology 1265**  
Dynamics of unsteady cavitating cascades  
*Period Obligations*  
09/28/72-10/15/79 FY81 TOTAL \$467,847  
*Prin Invest NASA Tech Officer CASE Category*  
Acosta, A J MSFC/Gross, L A 46-Mech Engr  
MSFC/Stinson, H P, Jr

**NAS 8-33108 California Institute of Technology 1266**  
Research in turbomachine rotor forces  
*Period Obligations*  
10/23/78-12/21/81 FY81 \$103,185 TOTAL \$313,337  
*Prin Invest NASA Tech Officer CASE Category*  
Acosta, A J MSFC/Gross, L A 46-Mech Engr  
Brennen, C MSFC/Goetz, O K

**NAS 8-33215 California Institute of Technology 1267**  
ATM guest investigator program empirical studies of solar flares Comparison of X-ray and H-alpha filterations and analysis of the energy balance of the thermal X-ray plasma  
*Period Obligations*  
11/17/78-11/16/79 FY81 TOTAL \$33,000  
*Prin Invest NASA Tech Officer CASE Category*  
Moore, R L MSFC/Deloach, A C 13-Physics  
MSFC/Snoddy, W C

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAS 8-33331 California Institute of Technology 1268**  
Study of supernova remnant RCW 103 and a search for X-ray emission from dwarf novae

Period	Obligations	
02/05/79-07/31/81	FY81	TOTAL \$8,683
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Garmine, G P	MSFC/Jones, J B	11-Astronomy
Tuohy, I R		

**NAS 8-33352 California Institute of Technology 1269**  
An SSS observation of the supernova remnant RCW 103

Period	Obligations	
05/30/79-10/31/81	FY81	TOTAL \$2,720
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Garmire, G P	MSFC/Jones, J B, Jr	11-Astronomy
Tuohy, I R		

**NCA 2-90101 California Institute of Technology 1270**  
A study of the short wavelength performance of a large aperture space telescope

Period	Obligations	
06/01/81-05/31/82	FY81 \$15,728	TOTAL \$15,728
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Soifer, B T	ARC/Werner, M W	11-Astronomy
Matthews, K Y		
Neugebauer, G		

**NCC 2-122 California Institute of Technology 1271**  
Stability and sensitivity analysis of life support systems

Period	Obligations	
02/01/81-01/31/82	FY81 \$27,222	TOTAL \$27,222
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	ARC/MacElroy, R D	51-Biological Sci
Stephanoploulos, A G N		

**NGL 05-002-003 California Institute of Technology 1272**  
Basic scientific research on lunar and planetary exploration

Period	Obligations	
12/01/59-11/30/81	FY81 \$204,963	TOTAL \$3,515,398
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Muhleman, D O	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

**NGL 05-002-034 California Institute of Technology 1273**  
Research in solar flares and the solar atmosphere

Period	Obligations	
05/18/65-10/31/81	FY81 \$278,000	TOTAL \$3,364,353
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zirin, H	HQ-SC/Chipman, E	11-Astronomy

**NGL 05-002-105 California Institute of Technology 1274**  
Shock effects in minerals

Period	Obligations	
08/16/68-03/31/82	FY81 \$186,000	TOTAL \$1,380,093
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ahrens, T J	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NGL 05-002-134 California Institute of Technology 1275**  
Modern astronomical instrument development

Period	Obligations	
10/27/69-03/31/82	FY81 \$49,984	TOTAL \$814,646
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Oke, J B	HQ-SC/Weiler, E J	11-Astronomy
	HQ-SC/Boggess, N W	

**NGL 05-002-140 California Institute of Technology 1276**  
Research in planetary astronomy

Period	Obligations	
04/11/69-03/31/82	FY81 \$54,944	TOTAL \$595,291
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Soifer, B T	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

**NGL 05-002-188 California Institute of Technology 1277**  
Lunar sample analysis

Period	Obligations	
02/03/71-01/31/82	FY81 \$766,195	TOTAL \$6,299,958
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wasserburg, G J	JSC/Warner, J L	12-Chemistry

**NGL 05-002-190 California Institute of Technology 1278**  
Lunar sample analysis

Period	Obligations	
01/19/71-01/31/82	FY81 \$75,000	TOTAL \$1,027,645
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Epstein, S	JSC/Warner, J L	13-Physics

**NGL 05-002-207 California Institute of Technology 1279**  
Research in infrared and X-ray astronomy

Period	Obligations	
02/18/71-09/30/82	FY81 \$80,000	TOTAL \$1,071,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Neugebauer, G	HQ-SC/Boggess, N W	11-Astronomy
	HQ-SC/Weiler, E J	

**NGL 05-002-338 California Institute of Technology 1280**  
Petrologic and microprobe investigations on isotopically dated lunar samples

Period	Obligations	
02/01/74-01/31/82	FY81	TOTAL \$602,422
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Albee, A L	JSC/Harris, J W	13-Physics

**NGR 05-002-114 California Institute of Technology 1281**  
Radio interferometry of Mars and Venus

Period	Obligations	
10/11/68-09/30/82	FY81 \$70,691	TOTAL \$546,509
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Muhleman, D O	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	



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<b>NGR 05-002-160 California Institute of Technology 1282</b>			
Research in particles and fields			
<i>Period</i>	<i>Obligations</i>		
10/27/69-09/30/81	FY81 \$515,000 TOTAL \$4,100,000		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Vogt, R E	HQ-SC/Gilman, D A	11-Astronomy	
	HQ-SC/Holt, S S		
<b>NGR 05-002-256 California Institute of Technology 1283</b>			
Study and research on experimental tests of gravitation theory			
<i>Period</i>	<i>Obligations</i>		
02/23/72-12/31/80	FY81 TOTAL \$213,000		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Thorne, K S	HQ-SC/Roman, N G	11-Astronomy	
	HQ-SC/Weiler, E J		
<b>NGR 05-002-284 California Institute of Technology 1284</b>			
High angular resolution cosmic X-ray astronomy observations in the energy band 0.15-2 KE and XUV observations of early stars from an attitude controlled rocket			
<i>Period</i>	<i>Obligations</i>		
03/05/73-03/31/81	FY81 TOTAL \$1,202,615		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Garmire, G P	GSFC/Guidotti, J	11-Astronomy	
Nousek, J			
Pravdo, S			
<b>NGR 05-002-303 California Institute of Technology 1285</b>			
Systematic search program for new Apollo Amor asteroids			
<i>Period</i>	<i>Obligations</i>		
08/01/73-09/30/80	FY81 TOTAL \$551,005		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Shoemaker, E M	HQ-SL/Boyce, J M	32-Geological Sci	
	HQ-SL/Quaide, W L		
<b>NGR 05-002-333 California Institute of Technology 1286</b>			
Lunar sample analysis			
<i>Period</i>	<i>Obligations</i>		
02/01/74-01/31/82	FY81 \$10,000 TOTAL \$658,074		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Tombrello, T A	JSC/Warner, J L	13-Physics	
<b>NGT 05-002-800 California Institute of Technology 1287</b>			
Graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
06/01/81-09/30/82	FY81 \$10,000 TOTAL \$10,000		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Neugebauer, G	HQ-LC/Carter, C H	13-Physics	
<b>NGT 05-003-790 California Institute of Technology 1288</b>			
Summer research program faculty fellowships			
<i>Period</i>	<i>Obligations</i>		
01/01/79-03/31/82	FY81 \$149,350 TOTAL \$385,281		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Albee, A L	HQ-LC/Carter, C H	49-Engr, NEC	
<b>NSG 1483 California Institute of Technology 1289</b>			
Low speed impact damage on composite materials			
<i>Period</i>	<i>Obligations</i>		
01/15/78-01/14/82	FY81 \$44,951 TOTAL \$164,892		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Knauss, W G	LARC/Starns, J H, Jr	41-Aero Engr	
Babcock, C D			
<b>NSG 5243 California Institute of Technology 1290</b>			
Observations of faint, high latitude blue stars and ultraviolet spectroscopy of peculiar galaxies and quasars			
<i>Period</i>	<i>Obligations</i>		
03/01/78-03/31/82	FY81 \$6,000 TOTAL \$64,800		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Oke, J B	GSFC/Boggess, A	11-Astronomy	
<b>NSG 5244 California Institute of Technology 1291</b>			
Ultraviolet observations of quasi-stellar objects			
<i>Period</i>	<i>Obligations</i>		
03/01/78-06/30/80	FY81 TOTAL \$32,800		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Schmidt, M	GSFC/Boggess, A	11-Astronomy	
Green, F R			
Estabrook, F B			
<b>NSG 5301 California Institute of Technology 1292</b>			
Research in atmospheric chemistry and transport			
<i>Period</i>	<i>Obligations</i>		
09/15/78-01/14/82	FY81 \$30,808 TOTAL \$77,547		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Yung, Y L	GSFC/Hansen, J E	31-Atmos Sci	
<b>NSG 5314 California Institute of Technology 1293</b>			
Optical observations at the Big Bear Solar Observatory			
<i>Period</i>	<i>Obligations</i>		
01/01/79-12/31/80	FY81 TOTAL \$60,000		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Zirin, H	GSFC/Donley, J L	31-Atmos Sci	
<b>NSG 5327 California Institute of Technology 1294</b>			
High resolution comparative observations of microwave and hard X-ray sources			
<i>Period</i>	<i>Obligations</i>		
02/01/79-01/31/81	FY81 TOTAL \$72,000		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Zirin, H	GSFC/Donley, J L	31-Atmos Sci	
<b>NSG 5369 California Institute of Technology 1295</b>			
Research of interstellar lines in the galactic halo			
<i>Period</i>	<i>Obligations</i>		
06/01/79-05/31/80	FY81 TOTAL \$13,600		
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Sargent, W L	GSFC/Boggess, A	11-Astronomy	
Gull, T R			

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**NSG 5381**                      **California Institute of Technology**                      **1296**  
Support of research involving International Ultraviolet Experiment  
(IUE) satellite  
*Period*    *Obligations*  
07/01/79-09/30/81                      FY81                      TOTAL \$15,000  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Greenstein, J. L.                      GSFC/Boggess, A                      11-Astronomy

**NSG 5384**                      **California Institute of Technology**                      **1297**  
Ultraviolet observations of young stellar populations  
*Period*    *Obligations*  
07/01/79-06/30/81                      FY81                      TOTAL \$2,916  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Meier, D L                      GSFC/Boggess, A                      11-Astronomy  
Schmidt, M

**NSG 7129**                      **California Institute of Technology**                      **1298**  
Relationship of impact cratering to the evolution of the lunar  
surface  
*Period*    *Obligations*  
04/01/75-04/01/82                      FY81                      TOTAL \$387,660  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Ahrens, T J                      HQ-SL/Quaide, W L                      32-Geological Sci

**NSG 7202**                      **California Institute of Technology**                      **1299**  
Laboratory partitioning studies relevant to the interpretation of  
lunar and meteoritic trace element data  
*Period*    *Obligations*  
02/01/76-01/31/82                      FY81 \$73,776                      TOTAL \$429,494  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Burnett, D S.                      HQ-SL/Quaide, W L                      32-Geological Sci  
HQ-SL/French, B M

**NSG 7342**                      **California Institute of Technology**                      **1300**  
Theoretical studies of solar oscillation  
*Period*    *Obligations*  
04/01/77-09/30/80                      FY81                      TOTAL \$39,992  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Goldreich, P                      HQ-SC/Bohlin, J D                      13-Physics

**NSG 7376**                      **California Institute of Technology**                      **1301**  
Photochemistry of the Jovian planets and their satellites  
*Period*    *Obligations*  
11/01/77-01/31/82                      FY81 \$53,000                      TOTAL \$160,172  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Yung, Y L                      HQ-SL/Murphy, R E                      31-Atmos Sci  
HQ-SL/Brunk, W E

**NSG 7495**                      **California Institute of Technology**                      **1302**  
Detection of gravitational radiation by the Doppler tracking of  
spacecraft  
*Period*    *Obligations*  
10/01/78-09/30/80                      FY81                      TOTAL \$33,800  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Mashhoon, B                      HQ-SC/Roman, N G.                      11-Astronomy  
HQ-SC/Rosendhal, J D.

**NSG 7508**                      **California Institute of Technology**                      **1303**  
Nonlinear interactions in superfluid dynamics Non-stationary heat  
transfer due to second sound shock waves  
*Period*    *Obligations*  
11/01/78-10/31/81                      FY81 \$68,901                      TOTAL \$192,510  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Liepmann, H W                      ARC/Chapman, G T                      13-Physics

**NSG 7610**                      **California Institute of Technology**                      **1304**  
Fundamental studies in geodynamics  
*Period*    *Obligations*  
08/01/79-07/31/84                      FY81 \$150,000                      TOTAL \$435,000  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Anderson, D L                      HQ-ET/Vitale, J A                      32-Geological Sci

**NSG 7635**                      **California Institute of Technology**                      **1305**  
Thermal behavior of Martian satellites Phobos and Deimos  
*Period*    *Obligations*  
06/01/79-06/30/81                      FY81                      TOTAL \$47,961  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Neugebauer, M G                      HQ-SL/Quaide, W L                      11-Astronomy

**NSG 9019**                      **California Institute of Technology**                      **1306**  
Shock compression measurements on lunar samples  
*Period*    *Obligations*  
10/01/74-01/31/82                      FY81                      TOTAL \$395,100  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Ahrens, T J                      JSC/Warner, J L                      19-Phys Sci, NEC

**NAG 2-49**                      **California Polytechnic State U - Pomona**                      **1307**  
Development of a small-scale V/STOL propulsion simulator for  
modelling ground effect fields  
*Period*    *Obligations*  
08/01/80-04/30/82                      FY81 \$18,897                      TOTAL \$32,769  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Lord, P A                      ARC/Christiansen, R S                      41-Aero Engr

**NAG 2-61**                      **California Polytechnic State U-San Luis**                      **1308**  
Experimental investigation of control concepts for buoyant hybrid  
airships using a small scale flying model  
*Period*    *Obligations*  
08/29/80-11/30/81                      FY81                      TOTAL \$25,018  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Sandlin, D R                      ARC/Talbot, P D                      41-Aero Engr

**NAG 4-4**                      **California Polytechnic State U-San Luis**                      **1309**  
The feasibility of thrust measurement during flight  
*Period*    *Obligations*  
06/01/80-06/30/82                      FY81 \$24,880                      TOTAL \$43,778  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
Carpenter, T W                      DFRC/Myers, L P                      41-Aero Engr  
DFRC/Burchman, F W

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**NAG 4-7**                      **California Polytechnic State U-San Luis**                      **1310**  
 Wind tunnel test of energy efficient livestock having improved ventilation and temperature control

<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$22,506	TOTAL \$22,506
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sandlin, D R	DFRC/Saltzman, E J	49-Engr, NEC
Hoffman, J		
Henry, E		

**NAS 2-10364**                      **California Polytechnic State U-San Luis**                      **1311**  
 Software development and application for dynamic analysis of the tilt rotor research aircraft

<i>Period</i>	<i>Obligations</i>	
09/04/79-12/31/81	FY81 \$22,684	TOTAL \$136,632
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Grimes, J E	ARC/Magee, J P	41-Aero Engr

**NCA 2-678001**                      **California Polytechnic State U-San Luis**                      **1312**  
 Vegetation mapping and inventory of forest resources for Santa Cruz count using LANDSAT imagery

<i>Period</i>	<i>Obligations</i>	
01/01/80-08/31/81	FY81 \$10,000	TOTAL \$37,675
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pillsbury, N	ARC/Peterson, D L	39-Env Sci, NEC

**NCA 2-678101**                      **California Polytechnic State U-San Luis**                      **1313**  
 Ad-2000 interactive graphic system tutorial

<i>Period</i>	<i>Obligations</i>	
10/01/80-09/30/82	FY81 \$17,366	TOTAL \$17,366
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Morgan, D E	ARC/Piazza, J E	22-Computer Science

**NCC 4-1**                      **California Polytechnic State U-San Luis**                      **1314**  
 Cal Poly graduate student program

<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/81	FY81 \$25,065	TOTAL \$122,631
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sandlin, D R	DFRC/Albers, J A	41-Aero Engr
	DFRC/Hodge, K E	

**NSG 2391**                      **California Polytechnic State U-San Luis**                      **1315**  
 Delay of separation with free stream turbulence

<i>Period</i>	<i>Obligations</i>	
08/01/79-01/31/83	FY81 \$29,884	TOTAL \$79,744
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hoffmann, J A	ARC/Koenig, D G	41-Aero Engr
	ARC/Aoyagi, K	

**NAS 3-22172**                      **California State University - Chico**                      **1316**  
 Operation of the LERC visitor information center

<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/82	FY81 \$337,264	TOTAL \$567,368
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lewis, M R	LERC/Bondurant, L	99-Multi-Discip

**NCA 2-253101**                      **California State University - Fullerton**                      **1317**  
 An attempt to model the nebula G333 6-0 2 with a spherically symmetric model

<i>Period</i>	<i>Obligations</i>	
12/15/80-06/01/81	FY81 \$1,992	TOTAL \$1,992
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rubin, R H	ARC/Erickson, E F	13-Physics
	ARC/Werner, M W	

**NCA 2-253901**                      **California State University - Fullerton**                      **1318**  
 Absorption by SO2 in the near UV and visible spectral regions with applications to Venus atmosphere

<i>Period</i>	<i>Obligations</i>	
06/15/79-12/31/81	FY81 \$1,575	TOTAL \$15,189
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nanes, R	ARC/Boese, R W	13-Physics

**NSG 7314**                      **California State University - Fullerton**                      **1319**  
 Meteoritic bismuth and Lead-208 micro distributions

<i>Period</i>	<i>Obligations</i>	
02/01/77-02/28/82	FY81 \$44,691	TOTAL \$181,681
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Woolum, D S	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7614**                      **California State University - Fullerton**                      **1320**  
 Atmospheric dynamics from Viking Lander data

<i>Period</i>	<i>Obligations</i>	
08/01/79-09/30/81	FY81 \$18,120	TOTAL \$64,534
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ryan, J A	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NCA 2-290101**                      **California State Univ - hayward**                      **1321**  
 Sociological survey in relation to project on advanced technology display house (ATDM)

<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/81	FY81	TOTAL \$25,200
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Huttman, E	ARC/Holley, H L	76-Sociology

**NAG 3-20**                      **California State University - Long Beach**                      **1322**  
 Gear lubrication and cooling study

<i>Period</i>	<i>Obligations</i>	
01/01/80-03/29/82	FY81 \$44,174	TOTAL \$99,155
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Akin, L	LERC/Townsend, D P	46-Mech Engr

**NCA 2-382001**                      **California State University - Long Beach**                      **1323**  
 Experimental investigation of velocity biasing in laser Doppler anemometer measurements

<i>Period</i>	<i>Obligations</i>	
03/17/80-12/31/81	FY81 \$19,856	TOTAL \$35,178
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Modarress, D	ARC/Johnson, D A	46-Mech Engr

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**NAG 3-73**      **California State University - Los Angeles**      **1324**  
Electrostatic fuel conditioning of internal combustion engines  
*Period*      *Obligations*  
06/15/80-01/15/82      **FY81**      **TOTAL \$35,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gold, P I      LERC/McFadden, J J      46-Mech Engr  
Kovacs, A J

**NASW 3257**      **California State University - Los Angeles**      **1325**  
Development of a direct contact heat exchanger for application  
in power generation systems utilizing geothermal brines  
*Period*      *Obligations*  
03/12/79-03/20/81      **FY81**      **TOTAL \$33,285**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Manvi, R      HQ-LC/Pohly, J G      46-Mech Engr  
JPL/Nakamura, Y

**NSG 2199**      **California State University - Los Angeles**      **1326**  
Biochemical and structural studies on the thermal resistance of  
'hardy' bacterial spores  
*Period*      *Obligations*  
01/01/77-12/31/81      **FY81 \$23,735**      **TOTAL \$88,735**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Yavarkovsky, J H      ARC/Hochstein, L I      51-Biological Sci

**NAGW 27**      **California State University - Northridge**      **1327**  
Renewed synoptic observations and research on basic properties  
of the solar cycle  
*Period*      *Obligations*  
02/01/80-09/30/81      **FY81 \$50,000**      **TOTAL \$94,927**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Martin, S F      HQ-SC/Chypman, E      13-Physics

**NSG 5324**      **California State University - Northridge**      **1328**  
Analysis of Solar Maximum Mission spectral information  
*Period*      *Obligations*  
01/15/79-10/31/81      **FY81**      **TOTAL \$100,500**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Martin, S F      GSFC/Wende, C      31-Atmos Sci

**NSG 5330**      **California State University - Northridge**      **1329**  
Research of active regions on the solar constant  
*Period*      *Obligations*  
02/01/79-01/31/82      **FY81 \$12,050**      **TOTAL \$30,544**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Chapman, G A      GSFC/Wende, C      31-Atmos Sci

**NSG 5333**      **California State University - Northridge**      **1330**  
Broad spectrum of magnetic, velocity and spectral data  
*Period*      *Obligations*  
02/01/79-02/28/82      **FY81 \$28,648**      **TOTAL \$95,171**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Chapman, G A      GSFC/Wende, C      31-Atmos Sci

**NCC 2-31**      **De Anza College**      **1331**  
Optimization of an interactive distributive computer network for  
planetary and infrared scientific research applications  
*Period*      *Obligations*  
10/01/79-10/31/81      **FY81**      **TOTAL \$65,755**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Frederick, V      ARC/Lum, H      49-Engr, NEC

**NGT 05-060-800**      **Humboldt State University**      **1332**  
Graduate student researchers program  
*Period*      *Obligations*  
09/01/81-08/31/82      **FY81 \$11,000**      **TOTAL \$11,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Fox, L, III      HQ-LC/Carter, C H      39-Env Sci, NEC

**NSG 7525**      **Humboldt State University**      **1333**  
Developing and implementation of an institutional mechanism  
for transfer of remote sensing technology in northern California  
as a test site  
*Period*      *Obligations*  
01/01/79-12/31/79      **FY81**      **TOTAL \$77,389**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hankins, D B      HQ-ET/Weinstein, R H      39-Env Sci, NEC  
ARC/Lumb, D

**NSG 7566**      **Pomona College**      **1334**  
Viking inorganic chemical analysis experiment Data analysis and  
laboratory simulations  
*Period*      *Obligations*  
03/01/79-09/01/81      **FY81**      **TOTAL \$171,726**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Baird, A K      HQ-SL/Quaide, W L      32-Geological Sci  
HQ-SL/Boyce, J M

**NAG 2-92**      **San Diego State University**      **1335**  
Proposal to investigate the clouds and atmosphere of Venus  
*Period*      *Obligations*  
02/01/81-04/30/82      **FY81 \$24,954**      **TOTAL \$24,954**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Young, A T      ARC/Fimmel, R O      19-Phys Sci, NEC

**NAG 2-104**      **San Diego State University**      **1336**  
Measurement of temperature and density fluctuations in turbulence  
using an ultraviolet laser  
*Period*      *Obligations*  
03/01/81-02/28/82      **FY81 \$39,940**      **TOTAL \$39,940**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Massey, G A      ARC/McKenzie, R L      19-Phys Sci, NEC

**NAG 8-356**      **San Diego State University**      **1337**  
Proposal to observe with the High Energy Astronomical  
Observatory-B observatory  
*Period*      *Obligations*  
06/27/80-06/27/83      **FY81**      **TOTAL \$7,499**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Young, A      MSFC/Swearingen, J C      11-Astronomy  
Vanburen, D

## NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

<b>NAGW 184</b>	<b>San Diego State University</b>	<b>1338</b>
Calculate transmission of CO2 in the atmosphere of Venus		
<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$30,000	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Young, L	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

<b>NAGW 230</b>	<b>San Diego State University</b>	<b>1339</b>
<b>Mechanism of geotropic curvature in plant shoots</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/81-06/30/82</b>	<b>FY81 \$23,468</b>	<b>TOTAL \$23,468</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Rayle, D</b>	<b>HO-SB/Halstead, T</b>	<b>W 51-Biological Sci</b>

<b>NAG 8-385</b>	<b>San Francisco State University</b>	<b>1340</b>
<b>Evolution of FE abundance in clusters of galaxies</b>		
<i>Period</i>	<i>Obligations</i>	
12/01/80-11/30/81	FY81 \$7,228	<b>TOTAL \$7,228</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lea, S	MSFC/Stone, J F	11-Astronomy

NAG 8-418		San Francisco State University		1341
Theoretical investigation of the Butcher-Oemler effect				
Period		Obligations		
07/27/81-07/26/82	FY81	\$7,491	TOTAL	\$7,491
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Lea, S M	MSFC/Stone, J F		11-Astronomy	

NAGW 94		San Francisco State University		1342
Ternary coordination complexes of metals with 5' nucleotides and amino acids in a clay environment				
Period		Obligations		
07/01/80-06/30/82	FY81	\$51,537	TOTAL	\$86,179
Prin Invest	NASA Tech Officer		CASE Category	
Orenberg, J B	HO-SB/Devincenzi, D L		12-Chemistry	

NCA 2-660102		San Francisco State University	1343
Soluble salts and the origins of life			
<i>Period</i>		<i>Obligations</i>	
07/01/81-01/31/82	FY81	\$10,306	TOTAL \$10,306
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Orenberg, J B	ARC/Lawless, J B		12-Chemistry

<b>NCC 2-32</b>	<b>San Francisco State University</b>	<b>1344</b>
<b>Studies in origin-of life research search for extra-terrestrial intelligence</b>		
<i>Period</i>	<i>Obligations</i>	
11/01/79-11/30/81	FY81 \$146,687	TOTAL \$307,460
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Seeger, C L	ARC/Billingham, J	59-Life Sci, NEC

NSG 7512		San Francisco State University		1345
Smectite clays in Mars soil Evidence for their presence and role in Viking biology experiments				
Period	Obligations			
10/01/78-10/31/81	FY81	\$54,180	TOTAL	\$126,542
Prin Invest	NASA Tech Officer		CASE Category	
Orenberg, J B	HQ-SL/Boyce, J M		51-Biological Sci	
Banin, A	HQ-SB/Devincenzi, D L			

NAG 2-84		San Jose State University		1346	
Automaticity and skill acquisition in a dual-task environment					
Period		Obligations			
10/01/80-12/31/81		FY81	\$28,500	TOTAL \$28,500	
Prin Invest		NASA Tech Officer		CASE Category	
Regan, J E		ARC/Curry, R E		69-Psych, NEC	
Plant. W T					

NAG 2-85		San Jose State University		1347
Application of surface acoustic wave devices to radio telemetry				
Period		Obligations		
01/01/81-03/31/82	FY81	\$6,387	TOTAL	\$6,387
Prnt Invest	NASA Tech Officer		CASE Category	
Strasilla, U	ARC/Deboh. G J		45-Elec Engr	

NAG 2-99		San Jose State University		1348
External thermal protection coating systems				
<i>Period</i>		<i>Obligations</i>		
10/01/80-12/31/81	FY81	\$24,594	TOTAL	\$24,594
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Meyer, L	ARC/Fish, R H		49-Engr, NEC	

<b>NAG 3-196</b>	<b>San Jose State University</b>	<b>1349</b>
<b>Transonic channel experiments to verify internal flow area ruling concepts</b>		
<i>Period</i>	<i>Obligations</i>	
07/25/81-07/24/82	FY81 \$23,122	TOTAL \$23,122
<i>Prm Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Roberts, W B	LERC/Crouse, J E	41-Aero Engr
Nielsen, H L	LERC/Sandcock, D M	

<b>NCA 2-675002</b>	<b>San Jose State University</b>	<b>1350</b>
<b>A self-report method for motion sickness assessment in the squirrel monkey Its use in habituation and sensory conflict studies</b>		
<i>Period</i>	<i>Obligations</i>	
<b>01/01/80-12/31/81</b>	<b>FY81 \$24,274</b>	<b>TOTAL \$58,551</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Ginsberg, R</b>	<b>ARC/Daunton, N G</b>	<b>51-Biological Sci</b>

NCA 2-675003	San Jose State University	1351
Early evolution of the cyanophyta		
<i>Period</i>	<i>Obligations</i>	
01/21/80-01/20/82	FY81 \$18,422	TOTAL \$34,734
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Weaver, E C	ARC/Klein, H P	54-Env Biology

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**NCA 2-675004**      **San Jose State University**      **1352**  
Investigation of mitochondria as a means to determine the effects  
of space weightlessness on the aging process of drosophila  
*Period*      *Obligations*  
**04/01/80-03/31/82**      **FY81 \$20,000**      **TOTAL \$41,253**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Yengoyan, L S      ARC/Miquel, J      12-Chemistry

**NCA 2-675007**      **San Jose State University**      **1353**  
Stratospheric-mesospheric models  
*Period*      *Obligations*  
**06/02/80-06/30/81**      **FY81**      **TOTAL \$20,044**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Riegel, C A      ARC/Whitten, R C      31-Atmos Sci  
ARC/Page, W A

**NCA 2-675008**      **San Jose State University**      **1354**  
Abiotic synthesis      Studies of potential primeval atmospheres and  
the development of biologically significant molecules  
*Period*      *Obligations*  
**07/01/80-01/31/82**      **FY81**      **TOTAL \$20,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ling, A C      ARC/Woeller, F H      51-Biological Sci  
Mayer, L A  
Selter, G A

**NCA 2-675009**      **San Jose State University**      **1355**  
Measures of vestibular function and emesis in animal candidates  
for flight experimentation  
*Period*      *Obligations*  
**07/01/80-06/30/82**      **FY81 \$3,500**      **TOTAL \$18,228**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Fox, R A      ARC/Daunton, N G      61-Biol Aspects

**NCA 2-675101**      **San Jose State University**      **1356**  
Development of the advanced free tip helicopter rotor concept  
*Period*      *Obligations*  
**10/01/80-05/31/81**      **FY81 \$14,665**      **TOTAL \$14,665**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Linecki, A G      ARC/Stroub, R H      46-Mech Engr

**NCA 2-675102**      **San Jose State University**      **1357**  
Analysis of flight loads measurement systems of the rotor systems  
research aircraft  
*Period*      *Obligations*  
**05/01/81-04/30/82**      **FY81 \$29,996**      **TOTAL \$29,996**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Agarwal, R B      ARC/Acree, C W      41-Aero Engr

**NCA 2-675103**      **San Jose State University**      **1358**  
Research problems in space and planetary biology, biotechnology,  
life support, and the origin of life  
*Period*      *Obligations*  
**06/15/81-06/14/82**      **FY81 \$13,299**      **TOTAL \$13,299**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Holley, D C      ARC/Deal, P H      59-Life Sci, NEC

**NCA 2-675907**      **San Jose State University**      **1359**  
Population dynamics in small scale microbial ecosystems  
*Period*      *Obligations*  
**07/01/79-01/01/82**      **FY81**      **TOTAL \$17,994**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Haight, R D      ARC/Deal, P H      51-Biological Sci

**NCC 2-3**      **San Jose State University**      **1360**  
A study of fiber materials for use in temperature resistant fiber  
reinforced composites  
*Period*      *Obligations*  
**05/31/79-05/31/82**      **FY81 \$19,080**      **TOTAL \$126,304**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Anderson, R N      ARC/Ricciello, S R      47-Materials Engr  
ARC/Goldstein, H

**NCC 2-4**      **San Jose State University**      **1361**  
An investigation of the toxic hazards from burning materials in  
controlled fires  
*Period*      *Obligations*  
**04/01/79-05/31/82**      **FY81 \$35,803**      **TOTAL \$116,501**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ballard, R C      ARC/Caghiostro, D E      12-Chemistry

**NCC 2-8**      **San Jose State University**      **1362**  
Development of superoxides as an improved oxygen source for  
breathing apparatus  
*Period*      *Obligations*  
**06/20/79-06/30/82**      **FY81 \$66,886**      **TOTAL \$167,852**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Spitze, L A      ARC/Wydeven, T      12-Chemistry  
Ballou, E V

**NCC 2-28**      **San Jose State University**      **1363**  
Characterization and degradation studies on aromatic polyimides,  
polyesters and composite resins  
*Period*      *Obligations*  
**10/01/79-10/31/81**      **FY81 \$57,394**      **TOTAL \$125,294**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ling, A      ARC/Heimbuch, A H      12-Chemistry  
Hsu, M T

**NCC 2-34**      **San Jose State University**      **1364**  
Cooperative research on flight management  
*Period*      *Obligations*  
**10/01/79-10/31/81**      **FY81 \$111,073**      **TOTAL \$227,760**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Plant, W T      ARC/Wempe, T E      59-Life Sci, NEC

**NCC 2-35**      **San Jose State University**      **1365**  
Simulation technology      Human performance in flight simulation  
abstract  
*Period*      *Obligations*  
**10/01/79-01/31/82**      **FY81 \$75,396**      **TOTAL \$177,726**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Plant, U T      ARC/Tanner, T. A      69-Psych, NEC

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**NCC 2-37** **San Jose State University** **1366**  
Helicopter human factors  
*Period* *Obligations*  
10/01/79-11/14/81 FY81 \$84,789 TOTAL \$141,267  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Plant, W T ARC/Hartzell, E J 69-Psych, NEC

**NCC 2-53** **San Jose State University** **1367**  
Mineral separation systems  
*Period* *Obligations*  
01/01/80-12/31/81 FY81 \$51,176 TOTAL \$80,032  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Spitze, L A ARC/Wydeven, T 12-Chemistry

**NCC 2-56** **San Jose State University** **1368**  
Heat release studies for aircraft materials  
*Period* *Obligations*  
01/01/80-12/31/81 FY81 \$48,418 TOTAL \$102,416  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Ling, A C ARC/Kourtides, D A 12-Chemistry  
ARC/Gilwee, W J

**NCC 2-68** **San Jose State University** **1369**  
One and two-dimensional atmospheric computer model and studies  
*Period* *Obligations*  
04/01/80-03/31/82 FY81 \$80,400 TOTAL \$127,835  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Riegel, C A ARC/Whitten, R C 31-Atmos Sci

**NCC 2-72** **San Jose State University** **1370**  
Changes in cortisol and antidiuretic hormone during induced motion sickness in Squirrel monkeys  
*Period* *Obligations*  
04/15/80-02/28/82 FY81 \$16,398 TOTAL \$26,398  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Fox, R A ARC/Suri, K P 51-Biological Sci

**NCC 2-73** **San Jose State University** **1371**  
A method for evaluating the transports by mean deviatory motions in a two-dimensional model  
*Period* *Obligations*  
05/01/80-04/30/82 FY81 \$60,564 TOTAL \$115,161  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Riegel, C A ARC/Danielsen, E F 31-Atmos Sci

**NCC 2-81** **San Jose State University** **1372**  
Synthesis, characterization, and formulation of perfluorocarbon ether elastomers  
*Period* *Obligations*  
10/01/80-06/30/82 FY81 \$108,000 TOTAL \$170,714  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Selter, G ARC/Rosser, R W 12-Chemistry  
Chen, T ARC/Parker, J A  
Cheng, C

**NCC 2-83** **San Jose State University** **1373**  
Determination, state estimation and parameter identification  
*Period* *Obligations*  
06/01/80-10/31/81 FY81 TOTAL \$84,125  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Wang, J C ARC/Duval, R W 21-Mathematics

**NCC 2-114** **San Jose State University** **1374**  
A study of the fire characteristics resulting from liquid fuel spills on flat, inclined surfaces  
*Period* *Obligations*  
01/01/81-12/31/82 FY81 \$43,359 TOTAL \$43,359  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Holmstrom, F ARC/Mansfield, J A 49-Engr, NEC

**NCC 2-116** **San Jose State University** **1375**  
Assessment of airline pilot's rhythm synchrony  
*Period* *Obligations*  
01/01/81-12/31/81 FY81 \$24,465 TOTAL \$24,465  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Holley, D C ARC/Winget, C M 59-Life Sci, NEC

**NCC 2-123** **San Jose State University** **1376**  
Smoothing of flight test and accident data  
*Period* *Obligations*  
02/01/81-12/31/81 FY81 \$5,399 TOTAL \$5,399  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Wang, J C ARC/Bach, R E 41-Aero Engr

**NCC 2-132** **San Jose State University** **1377**  
A radiative-convective model study of the climatic effects of aerosols  
*Period* *Obligations*  
04/01/81-03/31/82 FY81 \$42,193 TOTAL \$42,193  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Ackerman, T P ARC/Pollack, J B 31-Atmos Sci

**NCC 2-137** **San Jose State University** **1378**  
Environmental influences on failure mechanisms of graphite/epoxy composites  
*Period* *Obligations*  
07/01/81-06/30/82 FY81 \$58,798 TOTAL \$58,798  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Clements, L ARC/Nelson, H G 47-Materials Engr

**NCC 2-141** **San Jose State University** **1379**  
An experimental model to predict the degree of circadian rhythm disruption following alterations of rest-activity cycles  
*Period* *Obligations*  
05/01/81-12/31/81 FY81 \$9,400 TOTAL \$9,400  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Holley, D C ARC/Winget, C M 51-Biological Sci

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<b>NCC 2-143</b>	<b>San Jose State University</b>	<b>1380</b>
<b>Design and fabrication of surface acoustics wave devices</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/81-04/30/82</b>	<b>FY81 \$6,000</b>	<b>TOTAL \$6,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Yuen, C</b>	<b>ARC/Deboo, G J</b>	<b>45-Elec Engr</b>
	<b>ARC/Westbrook, D M</b>	

NCC 2-153	San Jose State University	1381
Energetic contributions of the mineral phase to chemistry on planetary surfaces		
<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$60,000	TOTAL \$60,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Coyne, L M	ARC/Chang, S	12-Chemistry
Ling, A C	ARC/Lawless, J L	

NCC 2-155		San Jose State University		1382	
The relative stress corrosion cracking susceptibility of candidate aluminum-lithium alloys					
Period		Obligations			
08/24/81-08/23/82		FY81 \$62,272		TOTAL \$62,272	
Prin Invest		NASA Tech Officer		CASE Category	
PIZZO, P P		ARC/Nelson, H G		47-Materials Eng	

<b>NAG 5-115</b>	<b>Sonoma State University</b>	<b>1383</b>
<b>Ultraviolet survey of BE stars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/01/80-03/31/82</b>	<b>FY81 \$1,800</b>	<b>TOTAL \$1,800</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Spear, G G</b>	<b>GSFC/Corrigan, J P</b>	<b>11-Astronomy</b>

<b>NAG 1-17</b>	<b>Stanford University</b>	<b>1384</b>
<b>The annoyance of impulsive helicopter noise</b>		
<i>Period</i>		<i>Obligations</i>
12/01/79-11/30/81	FY81 \$47,812	TOTAL \$106,512
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Karamcheti, K	LARC/Powell, C A	69-Psych, NEC
Ahumada, A		

<b>NAG 1-97</b>	<b>Stanford University</b>	<b>1385</b>
<b>Basic research in structural dynamics and control of large flexible space structures</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/01/80-01/31/82</b>	<b>FY81 \$138,696</b>	<b>TOTAL \$178,696</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Cannon, R H</b>	<b>LARC/Horner, G C</b>	<b>42-Astro Engr</b>
	<b>HO-RT/Larsen, R L</b>	

<b>NAG 1-105</b>	<b>Stanford University</b>	<b>1386</b>
<b>Research investigation of a miniature hydraulic actuator system</b>		
<i>Period</i>		<i>Obligations</i>
<b>10/01/80-09/30/82</b>	<b>FY81 \$28,520</b>	<b>TOTAL \$28,520</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Debra, D B</b>	<b>LARC/Edwards, J W</b>	<b>41-Aero Engr</b>
	<b>LARC/Terray, D E</b>	

<b>NAG 1-182</b>	<b>Stanford University</b>	<b>1387</b>
<b>High energy efficient solid state laser sources</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/81-05/31/82</b>	<b>FY81 \$50,357</b>	<b>TOTAL \$50,357</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Byer, R L</b>	<b>LARC/Browell, E V</b>	<b>45-Elec Engr</b>
	<b>LARC/Carter, A F</b>	

<b>NAG 1-202</b>	<b>Stanford University</b>	<b>1388</b>
<b>Effects of required take-off and landing runway lengths and cruise speed</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/81-05/31/82</b>	<b>FY81 \$27,701</b>	<b>TOTAL \$27,701</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Shevell, R S</b>	<b>LARC/Jernell, L S</b>	<b>41-Aero Engr</b>

<b>NAG 2-21</b>	<b>Stanford University</b>	<b>1389</b>
An experimental investigation of the behavior of sub-grid scale motions in turbulent shear flow		
<i>Period</i>	<i>Obligations</i>	
02/01/80-03/31/82	FY81 \$65,900	TOTAL \$128,256
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cantrell, B	ARC/Chapman, G T	41-Aero Engr

<b>NAG 2-29</b>	<b>Stanford University</b>	<b>1390</b>
<b>Research and training in computational turbulence flow simulation</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/80-03/31/82</b>	<b>FY81 \$90,519</b>	<b>TOTAL \$176,089</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Reynolds, W C</b>	<b>ARC/Peterson, V L</b>	<b>41-Aero Engr</b>
<b>Moin, P</b>		
<b>Kim, J J</b>		

<b>NAG 2-36</b>	<b>Stanford University</b>	<b>1391</b>
<b>Density measurement in air with a saturable absorbing seed gas</b>		
<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY81 \$25,436	TOTAL \$50,374
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Baganoff, D	ARC/McKenzie, R L	19-Phys Sci, NEC

NAG 2-42		Stanford University	1392
The Joint Institute for Aeronautics and Acoustics experimental investigation of flow over a single backward facing step			
Period	FY81		Obligations
Prin Invest	NASA Tech	Officer	CASE Category
05/01/80-04/30/82	\$50,000		TOTAL \$50,000
Kline, S J	ARC/Johnson, D A		41-Aero Engr
Eaton, J K			

<b>NAG 2-44</b>	<b>Stanford University</b>	<b>1393</b>
<b>Studies on lasers and laser devices</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/80-03/31/82</b>	<b>FY81 \$80,000</b>	<b>TOTAL \$160,000</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Harris, S E</b>	<b>ARC/McKenzie, R L</b>	<b>19-Phys Sci, NEC</b>
<b>Siegmán, A E</b>		
<b>Young, J F</b>		



**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAG 2-62** **Stanford University** **1394**  
High accuracy heat capacity measurement through the lambda transition of liquid helium  
*Period* *Obligations*  
09/01/80-08/31/82 **FY81 \$46,139** **TOTAL \$86,139**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Fairbanks, W M ARC/Brooks, W F 13-Physics

**NAG 2-79** **Stanford University** **1395**  
1980-81 conference on computation of complex turbulent flows  
Processing of evaluated flows for data library  
*Period* *Obligations*  
10/01/80-09/30/81 **FY81 \$50,000** **TOTAL \$50,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Cantwell, B ARC/Rubessin, M W 41-Aero Engr

**NAG 2-83** **Stanford University** **1396**  
Application of modern coherent and Fourier optical techniques to fluid mechanics research  
*Period* *Obligations*  
01/01/81-01/01/82 **FY81 \$22,937** **TOTAL \$22,937**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hesselink, L ARC/McKenzie, R L 19-Phys Sci, NEC

**NAG 2-111** **Stanford University** **1397**  
A study of flow past an airfoil with jet issuing from its lower surface  
*Period* *Obligations*  
02/01/81-01/31/82 **FY81 \$40,000** **TOTAL \$40,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Karamcheti, K ARC/Koenig, D G 41-Aero Engr  
Krothapalli, K ARC/Aoyagi, K

**NAG 2-122** **Stanford University** **1398**  
A theoretical study of circadian organization and its disruption known as jet lag  
*Period* *Obligations*  
07/01/81-01/31/82 **FY81 \$20,000** **TOTAL \$20,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Pittendrigh, C S ARC/Klein, H P 51-Biological Sci

**NAG 2-127** **Stanford University** **1399**  
A Schlieren-shadowgraph optical system for unsteady flow observations  
*Period* *Obligations*  
07/01/81-06/30/82 **FY81 \$40,000** **TOTAL \$40,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Karamcheti, K ARC/Soderman, P T 41-Aero Engr

**NAG 3-3** **Stanford University** **1400**  
Heat transfer and hydrodynamic studies on a curved surface with full-coverage film coolings  
*Period* *Obligations*  
11/01/79-10/29/82 **FY81 \$95,000** **TOTAL \$179,310**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Johnston, J P LERC/Gaugler, R E 46-Mech Engr  
Moffat, R J  
Kays, W M

**NAG 3-63** **Stanford University** **1401**  
Computing low-thrust transfers to synchronous orbit  
*Period* *Obligations*  
05/02/80-04/30/82 **FY81 \$24,243** **TOTAL \$65,979**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Breakwell, J V LERC/Diesposti, R S 42-Astro Engr

**NAG 3-151** **Stanford University** **1402**  
Interference study among satellite systems of various modulation techniques  
*Period* *Obligations*  
01/05/81-01/04/82 **FY81 \$65,421** **TOTAL \$65,421**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lusignan, B B LERC/Whyte, W A 45-Elec Engr

**NAG 5-120** **Stanford University** **1403**  
Computer simulations of very low frequency (VLF) wave-particle interactions in the magnetosphere  
*Period* *Obligations*  
10/01/80-09/30/81 **FY81 \$9,978** **TOTAL \$9,978**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hellwell, R A GSFC/Corrigan, J P 11-Astronomy

**NAG 5-178** **Stanford University** **1404**  
Research relative to rupture mechanics of plate boundaries  
*Period* *Obligations*  
05/15/81-05/14/82 **FY81 \$43,323** **TOTAL \$43,323**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Nur, A M GSFC/Welker, J 32-Geological Sci  
GSFC/Cohen, S C

**NAG 5-202** **Stanford University** **1405**  
A study of the chromospheres, coronae and transition regions of main sequence and giant stars  
*Period* *Obligations*  
08/01/81-01/31/82 **FY81 \$7,000** **TOTAL \$7,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Walker, A B GSFC/Bogges, A 11-Astronomy  
Antiochos, S K  
Zolcinski, M S

**NAG 8-325** **Stanford University** **1406**  
A study of the size and composition of interstellar grains  
*Period* *Obligations*  
03/01/80-02/18/82 **FY81** **TOTAL \$15,563**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Walker, A B MSFC/Jones, J B 11-Astronomy

**NAGW 6** **Stanford University** **1407**  
Neuroscientific and biocybernetic models of relevance for the design and development of intelligent machines  
*Period* *Obligations*  
07/01/79-10/31/80 **FY81** **TOTAL \$74,935**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Suppes, P HQ-RT/Gevarter, W B 99-Multi-Discip  
Anliker, J E LARC/Woolley, C

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAGW 86** **Stanford University** **1408**  
 A comparative study of calculated and observed magnetosheath plasma properties  
*Period Obligations*  
 07/01/80-09/30/81 **FY81** **TOTAL \$52,900**  
*Prin Invest NASA Tech Officer CASE Category*  
 Spreiter, J R HQ-SC/Schmerling, E R 12-Chemistry

**NAGW 92** **Stanford University** **1409**  
 Research in solar plasma theory  
*Period Obligations*  
 07/15/80-07/14/82 **FY81 \$153,000** **TOTAL \$305,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 Sturrock, P A HQ-SC/Birmingham, T J 13-Physics  
 HQ-SC/Newton, G P

**NAGW 128** **Stanford University** **1410**  
 Viking Lander mapping of the surface of Mars  
*Period Obligations*  
 12/01/80-07/31/81 **FY81 \$24,740** **TOTAL \$24,740**  
*Prin Invest NASA Tech Officer CASE Category*  
 Liebes, S HQ-SL/Boyce, J M 32-Geological Sci

**NAGW 152** **Stanford University** **1411**  
 New theoretical models of Jupiter's ionosphere in response to the results of radio occultation observations  
*Period Obligations*  
 03/15/81-03/14/82 **FY81 \$41,000** **TOTAL \$41,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 Eshleman, V R HQ-SL/Brinton, H C 13-Physics  
 HQ-SL/Brunk, W E

**NAGW 164** **Stanford University** **1412**  
 A comparative study of Jovian and terrestrial plasma waves  
*Period Obligations*  
 03/15/81-03/14/82 **FY81 \$35,000** **TOTAL \$35,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 Helliwell, R A HQ-SC/Mayr, H G 13-Physics  
 HQ-SC/Wiskerchen, M J

**NAGW 235** **Stanford University** **1413**  
 Study of the dynamics of atmosphere-ionosphere magnetosphere interactions  
*Period Obligations*  
 08/15/81-08/14/82 **FY81 \$200,000** **TOTAL \$200,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 Banks, P M. HQ-SC/Mayr, H G 31-Atmos Sci  
 HQ-SC/Schmerling, E R

**NAS 2-10512** **Stanford University** **1414**  
 Insulin resistance in animals exposed to weightlessness in spaceflight Effect of exercise training  
*Period Obligations*  
 01/17/80-09/30/81 **FY81** **TOTAL \$10,957**  
*Prin Invest NASA Tech Officer CASE Category*  
 Reaven, G M ARC/Ferandin, J 51-Biological Sci  
 Mondon, C E ARC/Sebesta, P

**NAS 5-21960** **Stanford University** **1415**  
 Gravity only orbit control subsystem  
*Period Obligations*  
 12/21/73-05/30/81 **FY81** **TOTAL \$261,262**  
*Prin Invest NASA Tech Officer CASE Category*  
 Debra, D B GSFC/Kant, S 42-Astro Engr

**NAS 5-24420** **Stanford University** **1416**  
 Observation and correlative studies from ISEE-C data from the Stanford Solar Telescope  
*Period Obligations*  
 02/17/78-09/30/81 **FY81** **TOTAL \$275,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 Wilcox, J M - GSFC/Wales, R O 13-Physics

**NAS 5-25043** **Stanford University** **1417**  
 Radiographic applications of spatial frequency multiplexing  
*Period Obligations*  
 06/19/78-12/18/80 **FY81** **TOTAL \$70,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 MacOvski, A GSFC/Ostrow, H 19-Phys Sci, NEC

**NAS 5-25688** **Stanford University** **1418**  
 Controlled and naturally occurring wave particle interaction-investigation on Dynamics Explorer phase III  
*Period Obligations*  
 05/01/80-07/31/83 **FY81 \$100,000** **TOTAL \$108,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 Helliwell, R A GSFC/Bullock, G 11-Astronomy

**NAS 5-25744** **Stanford University** **1419**  
 International Sun-Earth Explorer data reduction  
*Period Obligations*  
 11/01/79-10/31/81 **FY81 \$148,425** **TOTAL \$272,115**  
*Prin Invest NASA Tech Officer CASE Category*  
 Helliwell, R A GSFC/Corrigan, J P 11-Astronomy

**NAS 5-26020** **Stanford University** **1420**  
 Definition study of the total absorption shower counter  
*Period Obligations*  
 01/07/80-10/31/81 **FY81 \$212,220** **TOTAL \$297,220**  
*Prin Invest NASA Tech Officer CASE Category*  
 Hofstadler, R GSFC/Campbell, C F 11-Astronomy

**NAS 5-26682** **Stanford University** **1421**  
 Design phase of total absorption shower counter  
*Period Obligations*  
 08/01/81-02/01/83 **FY81 \$442,000** **TOTAL \$442,000**  
*Prin Invest NASA Tech Officer CASE Category*  
 Hofstadler, R GSFC/Campbell, C 11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

<b>NAS 8-32355</b>	<b>Stanford University</b>		<b>1422</b>
	Gyro test of general relativity in a satellite		
	<i>Period</i>	<i>Obligations</i>	
	03/11/77-11/15/81	FY81 \$677,695 TOTAL \$2,368,330	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Everitt, C W	MSFC/Potter, R A	13-Physics
	Fairbank, W M	MSFC/Decher, R	
	Debra, D B		
<b>NAS 8-32852</b>	<b>Stanford University</b>		<b>1423</b>
	Definition study of plasma depletion experiments during Spacelab mission 2		
	<i>Period</i>	<i>Obligations</i>	
	10/01/77-08/31/84	FY81 \$12,000 TOTAL \$69,841	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Darosa, A V	MSFC/Guynes, B V	31-Atmos Sci
		MSFC/Ise, R	
<b>NAS 8-33110</b>	<b>Stanford University</b>		<b>1424</b>
	Direct observation of interface instability during crystal growth		
	<i>Period</i>	<i>Obligations</i>	
	12/01/78-01/31/82	FY81 \$100,000 TOTAL \$265,793	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Tiller, W A	MSFC/Reeves, F A	19-Phys Sci, NEC
		MSFC/Savage, W A	
<b>NAS 8-33796</b>	<b>Stanford University</b>		<b>1425</b>
	A preliminary study of a cryogenic equivalence principle experiment on shuttle		
	<i>Period</i>	<i>Obligations</i>	
	04/30/80-12/30/81	FY81 \$25,226 TOTAL \$49,861	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Everitt, C W	MSFC/Decher, R	31-Atmos Sci
	Worden, P W	MSFC/Peters, P	
<b>NAS 9-16050</b>	<b>Stanford University</b>		<b>1426</b>
	Cardiovascular effects of weightlessness studied by two-dimensional, real-time ultrasound		
	<i>Period</i>	<i>Obligations</i>	
	01/17/80-01/31/82	FY81 TOTAL \$33,997	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Popp, R L	JSC/Peck, E E	59-Life Sci, NEC
<b>NASW 3204</b>	<b>Stanford University</b>		<b>1427</b>
	A program of research and research internships in telecommunications and information technology		
	<i>Period</i>	<i>Obligations</i>	
	07/01/78-09/30/81	FY81 \$253,652 TOTAL \$753,652	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Dunn, D	HQ-ET/Roberson, F	39-Env Sci, NEC
	Agnew, C	HQ-LC/Carter, C H	
<b>NCA 2-745004</b>	<b>Stanford University</b>		<b>1428</b>
	Stable boundary approximations for difference methods for compressible fluids		
	<i>Period</i>	<i>Obligations</i>	
	04/01/80-03/31/82	FY81 \$10,000 TOTAL \$23,538	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Oliger, J	ARC/Beam, R M	22-Computer Science
<b>NCA 2-745005</b>	<b>Stanford University</b>		<b>1429</b>
	A study of the use of multigrid techniques on the relaxation of steady transonic flows		
	<i>Period</i>	<i>Obligations</i>	
	06/01/80-05/31/82	FY81 \$7,000 TOTAL \$20,526	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Steger, J L	ARC/Lomax, H	41-Aero Engr
<b>NCA 2-745007</b>	<b>Stanford University</b>		<b>1430</b>
	Receptor alterations and stress		
	<i>Period</i>	<i>Obligations</i>	
	10/01/80-09/30/82	FY81 \$30,000 TOTAL \$30,000	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Feldman, D	ARC/Holton, E	51-Biological Sci
<b>NCA 2-745008</b>	<b>Stanford University</b>		<b>1431</b>
	Cosmological and local effects of the variable cosmological constant		
	<i>Period</i>	<i>Obligations</i>	
	09/15/80-09/14/82	FY81 \$13,200 TOTAL \$26,200	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Petrosian, V	ARC/Caroff, L J	13-Physics
<b>NCA 2-745101</b>	<b>Stanford University</b>		<b>1432</b>
	Numerical simulation of separated flows by a vortex tracing algorithm		
	<i>Period</i>	<i>Obligations</i>	
	10/01/80-10/31/81	FY81 \$10,613 TOTAL \$10,613	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Baganoff, D	ARC/Leonard, A	41-Aero Engr
<b>NCA 2-745102</b>	<b>Stanford University</b>		<b>1433</b>
	Distributed operating system for the scientific computer environment		
	<i>Period</i>	<i>Obligations</i>	
	11/01/80-09/30/81	FY81 \$28,417 TOTAL \$28,417	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Owicki, S S	ARC/Stevens, K G	22-Computer Science
<b>NCA 2-745103</b>	<b>Stanford University</b>		<b>1434</b>
	Purification, separation and resolution of amino acids by H P L C		
	<i>Period</i>	<i>Obligations</i>	
	06/01/81-05/31/82	FY81 \$13,982 TOTAL \$13,982	
	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
	Bonner, W A	ARC/Desmarais, D J	12-Chemistry

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**NCA 2-745104**                      **Stanford University**                      **1435**  
Development of time-accurate finite element techniques for  
first-order hyperbolic systems with particular emphasis on the  
compressible Euler equations

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$7,000	TOTAL \$7,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hughes, T R	ARC/Lomax, H	46-Mech Engr

**NCA 2-745105**                      **Stanford University**                      **1436**  
Chemical and microstructural characterization of noble metal  
particles highly dispersed on model supports

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/83	FY81 \$9,483	TOTAL \$9,483
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Boudart, M	ARC/Poppa, H	43-Chem Engr

**NCA 2-745106**                      **Stanford University**                      **1437**  
Application of orthogonal polynomial expansions to numerical  
simulation of fluid flows

<i>Period</i>	<i>Obligations</i>	
07/01/81-09/30/81	FY81 \$4,660	TOTAL \$4,660
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reynolds, W C	ARC/Leonard, A	46-Mech Engr

**NCA 2-745107**                      **Stanford University**                      **1438**  
Endocrine effects on rodent bone cells

<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$27,272	TOTAL \$27,272
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Feldman, D	ARC/Holton, E M	56-Medical Sciences

**NCA 2-745108**                      **Stanford University**                      **1439**  
Factors influencing orthostatic tolerance and re-entry tolerance  
following weightlessness simulation

<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/83	FY81 \$10,000	TOTAL \$10,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Debusk, R F	ARC/Goldwater, D	56-Medical Sciences
Haskell, W		

**NCA 2-745906**                      **Stanford University**                      **1440**  
Numerical simulation of the turbulent shear layer using the  
vortex-in-cell method

<i>Period</i>	<i>Obligations</i>	
09/01/79-08/31/81	FY81 \$19,500	TOTAL \$49,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Buneman, O	ARC/Leonard, A	45-Elec Engr
Couet, B		

**NCA 2-745911**                      **Stanford University**                      **1441**  
Cardiovascular deconditioning and exercise performance

<i>Period</i>	<i>Obligations</i>	
09/01/79-08/31/81	FY81 \$19,750	TOTAL \$46,915
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Debusk, R F	ARC/Goldwater, D	51-Biological Sci

**NCC 2-1**                                      **Stanford University**                      **1442**  
Development of ultrasonic indices for Space Shuttle passenger  
selection

<i>Period</i>	<i>Obligations</i>	
04/01/79-04/30/82	FY81 \$50,000	TOTAL \$150,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Popp, R	ARC/Sandler, H	56-Medical Sciences

**NCC 2-10**                                      **Stanford University**                      **1443**  
Aerothermodynamic heat shield environments

<i>Period</i>	<i>Obligations</i>	
09/15/79-09/14/81	FY81	TOTAL \$81,385
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bershader, D	ARC/Howe, J T	42-Astro Engr
	ARC/Nachtsheim, P R	

**NCC 2-13**                                      **Stanford University**                      **1444**  
Experimental studies of rotors

<i>Period</i>	<i>Obligations</i>	
06/01/79-10/31/81	FY81 \$36,000	TOTAL \$172,515
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Karamcheti, K	ARC/Warmbrodt, W G	41-Aero Engr
Chopra, I	ARC/Johnson, W R	

**NCC 2-15**                                      **Stanford University**                      **1445**  
A cooperative program in the computation of turbulent flows

<i>Period</i>	<i>Obligations</i>	
07/01/79-10/15/81	FY81 \$66,434	TOTAL \$167,514
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ferziger, J H	ARC/Rubens, M W	19-Phys Sci, NEC

**NCC 2-21**                                      **Stanford University**                      **1446**  
Fundamental studies of unsteady turbulent boundary layers

<i>Period</i>	<i>Obligations</i>	
09/01/79-10/31/81	FY81 \$69,845	TOTAL \$179,628
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reynolds, W G	ARC/Carr, L W	41-Aero Engr
Pankh, P G		

**NCC 2-29**                                      **Stanford University**                      **1447**  
NASA-Ames/Stanford Joint Institute for Aeronautics and  
Acoustics Shuttle infrared telescope pointing control system

<i>Period</i>	<i>Obligations</i>	
10/01/79-12/31/81	FY81 \$65,000	TOTAL \$125,927
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Powell, J D	ARC/Lorell, K R	42-Astro Engr

**NCC 2-38**                                      **Stanford University**                      **1448**  
Implantable instrumentation for studies of blood flow dis-  
tribution

<i>Period</i>	<i>Obligations</i>	
12/01/79-11/30/81	FY81 \$85,000	TOTAL \$165,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meindl, J D	ARC/Sandler, H	56-Medical Sciences

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

<b>NCC 2-44</b>				<b>Stanford University</b>	<b>1449</b>
Perceptual problems in aeronautics					
<i>Period</i>		<i>Obligations</i>			
11/01/79-10/31/81	FY81 \$100,360	TOTAL \$185,927			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Ahumada, A H	69-Psych, NEC			
Watson, A	ARC/Tanner, T A				
<b>NCC 2-46</b>				<b>Stanford University</b>	<b>1450</b>
An investigation of the performance, application potential, and inherent limitations of the new microanalytical instrument The Auger microprobe					
<i>Period</i>		<i>Obligations</i>			
02/01/80-10/31/81	FY81	TOTAL \$65,979			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Heinemann, K	ARC/Arnold, J O	13-Physics			
<b>NCC 2-50</b>				<b>Stanford University</b>	<b>1451</b>
Ultra high resolution molecular beam CARS spectroscopy with applications to planetary atmospheric molecules					
<i>Period</i>		<i>Obligations</i>			
01/01/80-03/31/82	FY81 \$30,000	TOTAL \$60,000			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Byer, R L	ARC/Chackerians, C	13-Physics			
<b>NCC 2-51</b>				<b>Stanford University</b>	<b>1452</b>
Cardiovascular magnetic measurements					
<i>Period</i>		<i>Obligations</i>			
01/01/80-12/31/81	FY81	TOTAL \$75,000			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Harrison, D C	ARC/Sandler, H	56-Medical Sciences			
<b>NCC 2-52</b>				<b>Stanford University</b>	<b>1453</b>
Biomedical technology transfer					
<i>Period</i>		<i>Obligations</i>			
01/01/80-12/31/81	FY81 \$157,000	TOTAL \$387,000			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Harrison, D C	ARC/Sandler, H	56-Medical Sciences			
<b>NCC 2-55</b>				<b>Stanford University</b>	<b>1454</b>
The research and training activities for the studies of the effects of fields					
<i>Period</i>		<i>Obligations</i>			
12/01/79-11/30/81	FY81 \$148,097	TOTAL \$272,426			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Snyder, C T	41-Aero Engr			
	ARC/Hickey, D H				
<b>NCC 2-59</b>				<b>Stanford University</b>	<b>1455</b>
Joint Institute for Aeronautics and Acoustics Study of trailing edge flows at high Reynolds number					
<i>Period</i>		<i>Obligations</i>			
12/01/79-11/30/81	FY81 \$81,097	TOTAL \$149,589			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Marvin, J G	41-Aero Engr			
Viswanath, P R	ARC/Brown, J L				
<b>NCC 2-62</b>				<b>Stanford University</b>	<b>1456</b>
Stanford/Ames Joint Institute for Aeronautics and Acoustics Studies of turbulent separation of airfoils and wings					
<i>Period</i>		<i>Obligations</i>			
10/01/79-10/31/81	FY81 \$64,199	TOTAL \$119,199			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Olson, L E	41-Aero Engr			
Wadcock, A J					
<b>NCC 2-74</b>				<b>Stanford University</b>	<b>1457</b>
Stanford/Ames Joint Institute for Aeronautics and Acoustics Aerodynamic studies relating to short-haul aircraft					
<i>Period</i>		<i>Obligations</i>			
03/01/80-02/28/82	FY81 \$65,000	TOTAL \$105,000			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Koenig, D G	41-Aero Engr			
Ayoub, A	ARC/Hickey, D H				
Levine, H					
<b>NCC 2-75</b>				<b>Stanford University</b>	<b>1458</b>
Stanford/Ames Joint Institute for Aeronautics and Acoustics flight effects on jet noise					
<i>Period</i>		<i>Obligations</i>			
03/01/80-04/30/82	FY81 \$84,795	TOTAL \$160,289			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Atencio, A	41-Aero Engr			
	ARC/Hickey, D H				
<b>NCC 2-76</b>				<b>Stanford University</b>	<b>1459</b>
Joint Institute for Aeronautics and Acoustics The effects of how fields on noise direction					
<i>Period</i>		<i>Obligations</i>			
03/01/80-02/28/82	FY81 \$50,000	TOTAL \$125,000			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Soderman, P T	41-Aero Engr			
<b>NCC 2-77</b>				<b>Stanford University</b>	<b>1460</b>
Boundary layers and wakes of oscillating airfoils at subsonic and transonic speeds					
<i>Period</i>		<i>Obligations</i>			
03/01/80-02/28/82	FY81 \$137,567	TOTAL \$217,567			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Karamcheti, K	ARC/Lee, G	41-Aero Engr			
Bodapati, S					
<b>NCC 2-82</b>				<b>Stanford University</b>	<b>1461</b>
Photodiagnostics of turbulent flows using laser-induced fluorescence					
<i>Period</i>		<i>Obligations</i>			
10/01/80-09/30/82	FY81 \$57,580	TOTAL \$101,039			
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>			
Bershafer, D	ARC/McKenzie, R L	41-Aero Engr			

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NCC 2-89** **Stanford University** **1462**  
Studies of rotor aeroacoustics  
*Period* *Obligations*  
06/01/80-05/31/82 FY81 \$15,350 TOTAL \$535,350  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Karamcheti, K ARC/Presley, L L 41-Aero Engr  
Levine, H ARC/Ahtye, W

**NCC 2-97** **Stanford University** **1463**  
Development of a three dimensional unsteady transonic full potential algorithm with arbitrary geometry capability  
*Period* *Obligations*  
11/01/80-09/30/81 FY81 \$6,924 TOTAL \$14,520  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Steger, T ARC/Morse, H A 41-Aero Engr  
ARC/Caradonna, F X

**NCC 2-103** **Stanford University** **1464**  
Long term influence of physical aging processes in epoxy matrix composites  
*Period* *Obligations*  
11/15/80-11/14/81 FY81 \$55,059 TOTAL \$55,059  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Heinemann, K ARC/Nelson, H G 47-Materials Engr  
Frank, E

**NCC 2-106** **Stanford University** **1465**  
Studies of flight director systems for powered lift aircraft  
*Period* *Obligations*  
11/01/80-12/31/81 FY81 \$91,154 TOTAL \$91,154  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Bryson, A E ARC/Franklin, J A 41-Aero Engr  
Hindson, W. S

**NCC 2-111** **Stanford University** **1466**  
In-situ investigations of graphoeptitaxy and small deposit particles  
*Period* *Obligations*  
01/01/81-02/28/82 FY81 \$52,725 TOTAL \$52,725  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Heinemann, K ARC/Arnold, J O 13-Physics

**NCC 2-113** **Stanford University** **1467**  
Mobility aid for the blind  
*Period* *Obligations*  
12/01/80-11/30/81 FY81 \$20,870 TOTAL \$20,870  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Harrison, D C ARC/Lum, H 49-Engr, NEC  
Lum, H

**NCC 2-120** **Stanford University** **1468**  
Investigation of the properties of doped-silicon on sapphire for far infrared bolometers  
*Period* *Obligations*  
03/01/81-02/28/82 FY81 \$35,471 TOTAL \$35,471  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Geballe, T H ARC/Kittel, P 13-Physics  
ARC/Lum, H

**NCC 2-125** **Stanford University** **1469**  
Computer simulation of surface and film processes  
*Period* *Obligations*  
05/01/81-04/30/82 FY81 \$60,000 TOTAL \$60,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Tiller, W A ARC/Cooper, D M 13-Physics  
Halcioglu, H T

**NCC 2-126** **Stanford University** **1470**  
The effects of simulated weightlessness on regional blood flow specifically during cardiovascular stress  
*Period* *Obligations*  
01/01/81-12/31/81 FY81 \$109,980 TOTAL \$109,980  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Harrison, D C ARC/Sandler, H 59-Life Sci, NEC

**NCC 2-129** **Stanford University** **1471**  
A study of a three dimensional hyperbolic grid generation scheme  
*Period* *Obligations*  
02/01/81-10/31/81 FY81 \$8,000 TOTAL \$8,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Steger, J L ARC/Sorenson, R L  
ARC/Reinhardt, W A  
29-Math Computer Sci, NEC

**NCC 2-145** **Stanford University** **1472**  
Construction of improved measurement system  
*Period* *Obligations*  
04/01/81-03/31/82 FY81 \$32,000 TOTAL \$32,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Steele, C ARC/Young, D R 56-Medical Sciences

**NCC 2-149** **Stanford University** **1473**  
Theoretical studies in aerodynamics  
*Period* *Obligations*  
07/01/81-10/31/81 FY81 \$30,000 TOTAL \$30,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Karamcheti, K ARC/Presley, L L 41-Aero Engr  
ARC/Lee, G

**NCC 2-150** **Stanford University** **1474**  
Study of powered lift aircraft technology  
*Period* *Obligations*  
07/01/81-10/31/81 FY81 \$20,000 TOTAL \$20,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Karamcheti, K ARC/Lampkin, B A 41-Aero Engr  
ARC/Zuk, J

**NGL 05-020-007** **Stanford University** **1475**  
Guidance and control of flight vehicles  
*Period* *Obligations*  
08/17/72-08/14/84 FY81 \$90,000 TOTAL \$1,774,564  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Bryson, A E ARC/Erzberger, H 49-Engr, NEC

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NGL 05-020-008**                      **Stanford University**                      **1476**  
 A study of the effects on the Earth's environment of very low frequency radiation into the magnetosphere from electrical transmission lines and ground based very low frequency transmitters

<i>Period</i>	<i>Obligations</i>
09/01/61-02/28/82	FY81 \$170,000 TOTAL \$2,095,440
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Helliwell, R A	HQ-SC/Mayr, H G                      13-Physics
	HQ-SC/Schmerling, E R

**NGL 05-020-014**                      **Stanford University**                      **1477**  
 Theoretical and experimental radio and radar studies of lunar, planetary ionospheres, atmospheres, and surfaces of Sun and interplanetary medium

<i>Period</i>	<i>Obligations</i>
04/30/63-09/30/82	FY81 \$220,000 TOTAL \$3,756,351
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Eshleman, V R	HQ-SL/Murphy, R E                      31-Atmos Sci
	HQ-SC/Schmerling, E R

**NGL 05-020-176**                      **Stanford University**                      **1478**  
 Investigation of space-related whistler propagation phenomena in laboratory plasmas

<i>Period</i>	<i>Obligations</i>
03/02/67-12/31/81	FY81 \$97,400 TOTAL \$1,372,200
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Yoshimoto, S M	HQ-SC/Mayr, H G                      19-Phys Sci, NEC
	HQ-SC/Glaser, H

**NGL 05-020-243**                      **Stanford University**                      **1479**  
 Refined methods of aeroelastic analysis and optimization

<i>Period</i>	<i>Obligations</i>
08/14/67-08/31/83	FY81 \$790 TOTAL \$229,764
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ashley, H	LARC/Doggett, R V, Jr                      41-Aero Engr

**NGL 05-020-272**                      **Stanford University**                      **1480**  
 Theoretical study of the solar atmosphere and the structure of active regions

<i>Period</i>	<i>Obligations</i>
06/07/68-09/30/81	FY81 \$90,000 TOTAL \$1,130,196
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Sturrock, P A	HQ-SC/Chipman, E C                      13-Physics

**NGL 05-020-582**                      **Stanford University**                      **1481**  
 Abiotic origins of optical activity

<i>Period</i>	<i>Obligations</i>
04/18/72-04/30/82	FY81 \$35,670 TOTAL \$351,005
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Bonner, W A	HQ-SB/Devincenzi, D L                      59-Life Sci, NEC

**NGR 05-020-452**                      **Stanford University**                      **1482**  
 Instrumentation study development for high energy physics experiment in space

<i>Period</i>	<i>Obligations</i>
06/09/70-12/31/81	FY81 TOTAL \$2,342,941
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hofstadter, R	HQ-SC/Kaluzienski, L J                      11-Astronomy

**NGR 05-020-456**                      **Stanford University**                      **1483**  
 Effects of altered gravitational stress on fluid balance and circulation of blood

<i>Period</i>	<i>Obligations</i>
05/13/70-12/31/81	FY81 TOTAL \$392,090
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Luetscher, J A	ARC/Keil, L C                      56-Medical Sciences

**NGR 05-020-559**                      **Stanford University**                      **1484**  
 Structure of solar magnetic and velocity fields

<i>Period</i>	<i>Obligations</i>
03/22/72-10/31/81	FY81 \$105,000 TOTAL \$842,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Wilcox, J M	HQ-SC/Chipman, E                      11-Astronomy

**NGR 05-020-634**                      **Stanford University**                      **1485**  
 Biomedical technology transfer

<i>Period</i>	<i>Obligations</i>
12/07/72-12/31/81	FY81 TOTAL \$1,531,488
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Harrison, D C	ARC/Sandler, H                      56-Medical Sciences

**NGR 05-020-649**                      **Stanford University**                      **1486**  
 Study of lunar and planetary surfaces

<i>Period</i>	<i>Obligations</i>
03/06/73-03/31/82	FY81 \$25,000 TOTAL \$173,170
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Howard, H T	HQ-SL/Boyce, J M                      32-Geological Sci
	HQ-SL/Holt, H E

**NGR 05-020-668**                      **Stanford University**                      **1487**  
 Magnetosphere structure and radiation mechanisms on pulsars

<i>Period</i>	<i>Obligations</i>
11/01/73-10/31/81	FY81 \$35,000 TOTAL \$227,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Sturrock, P A	HQ-SC/Kaluzienski, L J                      11-Astronomy
	HQ-SC/Holt, S S

**NGT 05-020-412**                      **Stanford University**                      **1488**  
 A summer program of NASA summer faculty fellowships

<i>Period</i>	<i>Obligations</i>
12/16/69-03/31/82	FY81 \$232,877 TOTAL \$1,943,391
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Bershader, D	HQ-LC/Carter, C H                      49-Engr, NEC
Mayers, J	

## NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGT 05-020-800		Stanford University	1489
Graduate student researchers program			
<i>Period</i>		<i>Obligations</i>	
09/01/80-09/30/82	FY81	\$8,000	TOTAL \$15,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Zare, R N	HQ-LC/Carter, C H		12-Chemistry

<b>NGT 05-020-801</b>	<b>Stanford University</b>	<b>1490</b>
<b>Graduate student training program in computational fluid dynamics</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/80-12/31/81</b>	<b>FY81 \$100,000</b>	<b>TOTAL \$175,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Chapman, D R</b>	<b>HO-RT/Graves, R A</b>	<b>41-Aero Engr</b>

NGT 05-020-802		Stanford University	1491
Graduate student researchers program			
<i>Period</i>		<i>Obligations</i>	
06/15/81-08/31/82	FY81	\$13,000	TOTAL \$13,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Steger, J L	HO-LC/Carter, C H		41-Aero Engr

NGT 05-020-803	Stanford University	1492
Graduate student researchers program		
<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$11,100	TOTAL \$11,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Walker, Jr., A B	HO-LC/Carter, C H	11-Astronomy

<b>NSG 2092</b>	<b>Stanford University</b>	<b>1493</b>
<b>In vivo determination of bone properties from mechanical measurements</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/75-09/30/81</b>	<b>FY81 \$25,000</b>	<b>TOTAL \$150,119</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Steele, C R</b>	<b>ARC/Young, D R</b>	<b>56-Medical Sciences</b>

<b>NSG 2121</b>	<b>Stanford University</b>	<b>1494</b>
<b>Preliminary design and computer simulation of a very large Fourier transform processor for the inter-stellar search system</b>		
<i>Period</i>	<i>Obligations</i>	
<b>01/01/76-10/31/81</b>	<b>FY81 \$210,000</b>	<b>TOTAL \$451,371</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Peterson, A M</b>	<b>ARC/Wolfe, J H</b>	<b>49-Engr, NEC</b>
	<b>ARC/Billingham, J</b>	

NSG 2359	Stanford University	1495
Aerodynamics, aeroelasticity and stability of hang gliders		
<i>Period</i>	<i>Obligations</i>	
01/01/79-12/31/81	FY81 \$25,000	TOTAL \$77,429
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ashley, H	ARC/Ciffone, D L	41-Aero Engr

NSG 2400	Stanford University	1496
Control of V/STOL aircraft in ground effect		
<i>Period</i>	<i>Obligations</i>	
08/01/79-10/31/81	FY81	TOTAL \$37,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Debra, D B	ARC/Franklin, J A	41-Aero Engr
Bryson, A E		

<b>NSG 4002</b>	<b>Stanford University</b>	<b>1497</b>
Theoretical and experimental investigations in the control of aircraft		
<i>Period</i>	<i>Obligations</i>	
09/01/74-12/31/81	FY81 \$75,000	TOTAL \$475,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Debra, D B	DFRC/Gilyard, G B	41-Aero Engr
Ashley, H		
Bryson, A E, Jr		

<b>NSG 5131</b>	<b>Stanford University</b>	<b>1498</b>
<b>Spectroscopy of cosmic X-ray sources of the solar corona</b>		
<i>Period</i>	<i>Obligations</i>	
11/15/76-12/31/81	FY81 \$180,000	TOTAL \$885,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Walker, A B	GSFC/Guidotti, J G	13-Physics
Underwood, J H	HO-SC/Bohlin, J D	

<b>NSG 5254</b>	<b>Stanford University</b>	<b>1499</b>
Stochastic modeling of time-averaged equations for climate dynamics		
<i>Period</i>	<i>Obligations</i>	
03/15/78-03/14/81	FY81	TOTAL \$250,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Spreiter, J R	GSFC/Halem, M	31-Atmos Sci

<b>NSG 5417</b>	<b>Stanford University</b>	<b>1500</b>
<b>Determination of interstellar abundances by correlated X-ray and ultraviolet observations</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/01/79-06/30/81</b>	<b>FY81</b>	<b>TOTAL \$24,200</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Walker, A B</b>	<b>GSFC/Boggess, A</b>	<b>11-Astronomy</b>
<b>Stern, R A</b>		
<b>Antiochos, S K</b>		

NSG 7092	Stanford University	1501
Energy release in solar flares based on OSO-5 data		
<i>Period</i>	<i>Obligations</i>	
10/01/74-10/31/81	FY81 \$45,000	TOTAL \$305,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Petrosian, J	HO-SC/Chipman, E	11-Astronomy

NSG 7204	Stanford University	1502
Theoretical analyses of relativistic gravitational experiments		
<i>Period</i>	<i>Obligations</i>	
10/01/75-09/30/81	FY81	TOTAL \$109,785
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Will, C M	HQ-SC/Weiler, E J	11-Astronomy
	HQ-SC/Bogges, N W	



### NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NSG 7395	Stanford University	1503
Radar studies of the Martian surface		
<i>Period</i>	<i>Obligations</i>	
03/15/78-07/31/82	FY81	TOTAL \$32,226
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tyler, G L	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Quade, W L	

NSG 7476	Stanford University	1504
Investigation of the structure and composition of the International Solar Mission and of fluorescence and self-absorption at low energies in binary X-ray sources using SAS-3 observations		
Period	Obligations	
06/01/78-02/28/80	FY81	TOTAL \$21,100
Prin Invest	NASA Tech Officer	CASE Category
Walker, A B, Jr	HQ-SC/Kaluzonski, L J	11-Astronomy
Ride, S K	HQ-SC/Fishman, G J	

<b>NSG 7538</b>	<b>Stanford University</b>	<b>1505</b>
<b>Stereophotogrammetric and stereophotometric analysis of Viking Lander imaging data</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/79-09/30/80</b>	<b>FY81</b>	<b>TOTAL \$143,347</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Levinthal, E</b>	<b>HQ-SL/Boyce, J M</b>	<b>32-Geological Sci</b>
	<b>HQ-SL/Quade, W L</b>	

NSG 7552	Stanford University	1506
Analysis of coronal flow and wave phenomena during the solar occultation of the Viking Earth radio link		
<i>Period</i>	<i>Obligations</i>	
10/01/78-10/31/81	FY81 \$55,000	TOTAL \$146,882
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tyler, G L	HQ-SC/Chipman, E	13-Physics

NSG 7561	Stanford University	1507
Reduction and analyses of Viking bistatic radar observations of Mars from the winter 1977/1978 apparition		
<i>Period</i>	<i>Obligations</i>	
03/01/79-03/31/82	FY81 \$45,000	TOTAL \$172,344
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tyler, G L	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

NSG 7619		Stanford University		1508
Studies on lasers and laser devices				
<i>Period</i>		<i>Obligations</i>		
04/01/79-03/31/80		FY81	TOTAL	\$65,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Harris, S E	HQ-RT/Schwenk, F C	13-Physics		
Siegmán, A E	HQ-RS/Rubin, B			

<b>NAG 2-19</b>	<b>University of California - Berkeley</b>	<b>1509</b>
<b>A study of methods for improving capacity at major airports</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/80-01/19/82	FY81 \$29,762	TOTAL \$59,762
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kanafani, A	ARC/Forrest, R D	41-Aero Engr
Hockaday, S L	ARC/Faye, A E	
Gosling, G D		

NAG 2-102	University of California - Berkeley	1510
Superconducting receivers for near-millimeter wave lengths		
<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$30,000	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Richards, P L	ARC/Kittel, P	13-Physics
	ARC/Lum, H	

NAG 3-88	University of California - Berkeley	1511
Coherent conversion of the sunlight spectrum		
<i>Period</i>	<i>Obligations</i>	
07/28/80-12/31/81	FY81	TOTAL \$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gustafson, T K	LERC/Anderson, L M	13-Physics

NAG 3-111		University of California - Berkeley		1512
First-phase research and conceptual analysis for commercialization of redox energy storage and phosphoric acid fuel cell system				
Period		Obligations		
10/01/80-10/31/81		FY81 \$33,955	TOTAL	\$223,937
<i>Prn Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Sullivan, L A		LERC/Bollenbacher, G	99-Multi-Discip	

<b>NAG 3-131</b>	<b>University of California - Berkeley</b>	<b>1513</b>
<b>Numerical modeling of turbulent combustion</b>		
<i>Period</i>	<i>Obligations</i>	
11/28/80-11/27/81	FY81 \$69,000	TOTAL \$69,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Oppenheim, A K	LERC/Marek, C J	41-Aero Engr
Chorin, A J		

NAG 3-137		University of California - Berkeley		1514
Study of jet ignition using liquid fuels				
<i>Period</i>		<i>Obligations</i>		
12/08/80-12/07/81	FY81	\$89,965	TOTAL	\$89,965
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Oppenheim, A K	LERC/Schock, H J		46-Mech Engr	
	LERC/Willis, E A			

<b>NAG 3-146</b>	<b>University of California - Berkeley</b>	<b>1515</b>
Surface tension phenomena under low-and zero-gravity conditions		
<i>Period</i>	<i>Obligations</i>	
01/07/81-01/06/82	FY81 \$26,900	TOTAL \$26,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Concus, K	LERC/Chai, A T	13-Physics
Coles, D	LERC/Labus, T	
Finn, R		

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAG 5-27**                      **University of California - Berkeley**                      **1516**  
Investigation of the variability in the X-ray emission of extragalactic sources

<i>Period</i>		<i>Obligations</i>	
03/15/80-03/14/81	FY81	TOTAL	\$6,881
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bowyer, C S	GSFC/Corrigan, J P	11-Astronomy	

**NAG 5-139**                      **University of California - Berkeley**                      **1523**  
Equatorial extreme far ultraviolet airglow

<i>Period</i>		<i>Obligations</i>	
02/01/81-01/31/82	FY81	\$16,963	TOTAL \$16,963
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bowyer, S	GSFC/Spencer, N W	31-Atmos Sci	
Paresce, F	GSFC/Aikin, A C		

**NAG 5-28**                      **University of California - Berkeley**                      **1517**  
Spectral variability of accreting degenerate dwarfs

<i>Period</i>		<i>Obligations</i>	
03/15/80-03/14/81	FY81	TOTAL	\$8,307
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bowyer, C S	GSFC/Corrigan, J P	11-Astronomy	

**NAG 5-168**                      **University of California - Berkeley**                      **1524**  
Observations of high velocity clouds

<i>Period</i>		<i>Obligations</i>	
05/01/81-04/30/82	FY81	\$3,614	TOTAL \$3,614
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Weaver, H F	GSFC/Boggess, A	11-Astronomy	
Crutcher, R M			

**NAG 5-55**                      **University of California - Berkeley**                      **1518**  
Study of chromospheric activity in spectroscopic binary systems

<i>Period</i>		<i>Obligations</i>	
05/01/80-10/31/81	FY81	TOTAL	\$16,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Kuhl, L	GSFC/Boggess, A	11-Astronomy	

**NAG 6-10**                      **University of California - Berkeley**                      **1525**  
Sounding rocket research program

<i>Period</i>		<i>Obligations</i>	
11/01/80-10/31/81	FY81	\$160,000	TOTAL \$160,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Mozar, F S	WFC/Early, L J	19-Phys Sci, NEC	
	WFC/Pless, R H		

**NAG 5-69**                      **University of California - Berkeley**                      **1519**  
Eclipse coverage of selected variable and binary stars

<i>Period</i>		<i>Obligations</i>	
06/01/80-05/31/82	FY81	\$32,800	TOTAL \$42,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bowyer, C S	GSFC/Boggess, A	11-Astronomy	

**NAG 8-301**                      **University of California - Berkeley**                      **1526**  
Improved positions of HEAO-1 low energy X-ray sources, an X-ray and optical study of nearby Seyfert 2 and emission line galaxies, and correlation of coronal and chromospheric activity with binary period

<i>Period</i>		<i>Obligations</i>	
03/01/80-06/30/81	FY81	TOTAL	\$20,022
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bowyer, C S	MSFC/Jones, J B	11-Astronomy	
Mason, K			
Phillips, M M			

**NAG 5-95**                      **University of California - Berkeley**                      **1520**  
Research relative to low noise amplifiers for radio astronomy

<i>Period</i>		<i>Obligations</i>	
09/01/80-11/30/81	FY81	TOTAL	\$39,944
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Welch, W J	GSFC/Clark, T A	45-Elec Engr	

**NAG 8-303**                      **University of California - Berkeley**                      **1527**  
A soft X-ray observation of Procyon and the coroneae of Bootes

<i>Period</i>		<i>Obligations</i>	
01/28/80-01/27/81	FY81	TOTAL	\$10,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bowyer, C S	MSFC/Jones, J B	11-Astronomy	
Walter, F M			
Lampton, M			

**NAG 5-103**                      **University of California - Berkeley**                      **1521**  
Ultraviolet study of hot stars associated with ring-nebulae

<i>Period</i>		<i>Obligations</i>	
09/01/80-08/31/81	FY81	TOTAL	\$1,725
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Chu, Y H	GSFC/Boggess, A	11-Astronomy	

**NAG 8-311**                      **University of California - Berkeley**                      **1528**  
Observation of rich galaxy cluster on High Energy Astronomical Observatory-B guest investigator program

<i>Period</i>		<i>Obligations</i>	
01/21/80-01/20/81	FY81	TOTAL	\$7,964
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Silk, J I	MSFC/Jones, J B	11-Astronomy	
White, S D			

**NAG 5-117**                      **University of California - Berkeley**                      **1522**  
Long term X-ray observations of systems with unusual optical counterparts

<i>Period</i>		<i>Obligations</i>	
10/01/80-09/30/81	FY81	TOTAL	\$4,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bowyer, C S	GSFC/Corrigan, J P	11-Astronomy	

## NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

<b>NAG 8-320</b>	<b>University of California - Berkeley</b>	<b>1529</b>
Extended gaseous halos of galaxies and gaseous halos of extended radio galaxies		
<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/81	FY81	TOTAL \$8,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Silk, J I	MSFC/Jones, J B	11-Astronomy

NAG 8-333	University of California - Berkeley	1530
High resolution X-ray, optical and radio imagery of Parks 0837-12		
<i>Period</i>	<i>Obligations</i>	
02/15/80-02/14/81	FY81	TOTAL \$6,724
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Spinrad, H	MSFC/Jones, J B	11-Astronomy
Mason, K O		
Bower, S		

<b>NAG 8-336</b>	<b>University of California - Berkeley</b>	<b>1531</b>
<b>X-ray emission from T Tauri stars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/80-02/28/81</b>	<b>FY81</b>	<b>TOTAL \$6,500</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Kuhl, L V</b>	<b>MSFC/Jones, J B</b>	<b>11-Astronomy</b>
<b>Walter, F M</b>		

NAG 8-351	University of California - Berkeley	1532
High Energy Astronomical Observatory-2 guest investigator program A high resolution study of a very distant rich and luminous cluster of galaxies		
Period	Obligations	
06/25/80-11/25/81	FY81	TOTAL \$7,776
Prn Invest	NASA Tech Officer	CASE Category
Silk, J I	MSFC/Swearingen, J C	11-Astronomy

<b>NAG 8-373</b>	<b>University of California - Berkeley</b>		<b>1533</b>
<b>Coordinated X-ray, optical and radio observations</b>			
<i>Period</i>	<i>Obligations</i>		
<b>09/15/80-09/14/81</b>	<b>FY81</b>	<b>\$23,502</b>	<b>TOTAL \$23,502</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
<b>Bowyer, C S</b>	<b>MSFC/Stone, J F</b>	<b>11-Astronomy</b>	

<b>NAG 8-381</b>	<b>University of California - Berkeley</b>	<b>1534</b>
An X-ray study of pre-main sequence stars in NGC 2264 with the HRI		
<i>Period</i>	<i>Obligations</i>	
09/22/80-09/21/81	FY81	TOTAL \$7,510
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kuhl, L N	MSFC/Stone, J F	11-Astronomy

NAG 8-397		University of California - Berkeley	1535
Spectra of 3 T Tauri stars			
<i>Period</i>		<i>Obligations</i>	
06/18/81-06/17/82	FY81 \$7,755		TOTAL \$7,755
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Kuhl, L V	MSFC/Stone, J F		11-Astronomy

<b>NAG 9-15</b>	<b>University of California - Berkeley</b>	<b>1536</b>
<b>EU neutron capture, regolith dynamics and lunar stratigraphy</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/01/81-01/31/82</b>	<b>FY81 \$28,500</b>	<b>TOTAL \$28,500</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Depaolo, D J</b>	<b>JSC/Warner, J L</b>	<b>99-Multi-Discip</b>

<b>NAGW 44</b>	<b>University of California - Berkeley</b>	<b>1537</b>
<b>The nature of dwarf novae and related systems</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/80-02/28/82</b>	<b>FY81 \$14,975</b>	<b>TOTAL \$29,936</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Lampton, M L</b>	<b>HQ-SC/Kaluzienski, L J</b>	<b>11-Astronomy</b>
	<b>HQ-SC/Holt, S S</b>	

<b>NAGW 66</b>	<b>University of California - Berkeley</b>		<b>1538</b>
<b>Microwave and theoretical studies related to the COBE satellite mission</b>			
<i>Period</i>	<i>Obligations</i>		
07/01/80-06/30/82	FY81 \$15,000	TOTAL \$30,000	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Smoot, G F	HQ-SC/Bogges, N W	11-Astronomy	
	HQ-SC/Weiler, E J		

<b>NAGW 75</b>	<b>University of California - Berkeley</b>	<b>1539</b>
<b>Theoretical study of auroral arc formation</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$111,500	TOTAL \$216,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hudson, M K	HQ-SC/Birmingham, T J	13-Physics
	HQ-SC/Newton, G P	

NAGW 211		University of California - Berkeley		1540
Conference on thioredoxins				
<i>Period</i>		<i>Obligations</i>		
06/01/81-05/31/82		FY81 \$15,280	TOTAL \$15,280	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Buchanan, B B		HQ-SB/Devincenzi, D L		
			51-Biological Sci	

<b>NAGW 239</b>	<b>University of California - Berkeley</b>	<b>1541</b>
<b>Geotropic stimulus production in roots of corn</b>		
<i>Period</i>		<i>Obligations</i>
<b>08/01/81-07/31/82</b>	<b>FY81 \$35,399</b>	<b>TOTAL \$35,399</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Feldman, L J</b>	<b>HQ-SB/Halstead, T W</b>	<b>51-Biological Sci</b>

<b>NAS 1-16268</b>	<b>University of California - Berkeley</b>	<b>1542</b>
Definition study for an advanced cosmic ray experiment utilizing the long duration exposure facility (LDEF)		
<i>Period</i>	<i>Obligations</i>	
07/17/80-10/01/81	FY81	TOTAL \$60,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Price, P B	LARC/Jones, J L	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAS 2-10499**      **University of California - Berkeley**      **1543**  
Monkey metabolism, body composition and cardiovascular function in weightlessness

<i>Period</i>	<i>Obligations</i>	
01/17/80-09/30/81	FY81	TOTAL \$15,133
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pace, N	ARC/Ferandin, J A	51-Biological Sci
	ARC/Connolly, J	

**NAS 2-10504**      **University of California - Berkeley**      **1544**  
Scale relationships in mammalian metabolism in weightlessness

<i>Period</i>	<i>Obligations</i>	
01/17/80-09/30/81	FY81 \$30,000	TOTAL \$45,133
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pace, N	ARC/Ferandin, J A	51-Biological Sci
	ARC/Connolly, J	

**NAS 2-10658**      **University of California - Berkeley**      **1545**  
Metabolic rate and thyroid function in the monkey subjects of the Cosmos 81 mission

<i>Period</i>	<i>Obligations</i>	
06/01/80-07/31/83	FY81 \$20,000	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pace, N	ARC/Souza, K	51-Biological Sci
	ARC/Heinrich, M	

**NAS 5-20079**      **University of California - Berkeley**      **1546**  
Energetic particles flux experiment for international Sun-Earth Explorer mother and daughter spacecraft

<i>Period</i>	<i>Obligations</i>	
05/23/74-12/31/81	FY81	TOTAL \$1,429,290
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, K A	GSFC/Kowalski, G E	13-Physics

**NAS 5-20995**      **University of California - Berkeley**      **1547**  
Isotopic composition of primary cosmic rays H thru FE for ISEE C spacecraft

<i>Period</i>	<i>Obligations</i>	
03/19/75-09/30/82	FY81 \$320,400	TOTAL \$1,880,400
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Heckman, H K	GSFC/Wales, R O	13-Physics

**NAS 5-22307**      **University of California - Berkeley**      **1548**  
Solar X-ray and interplanetary and solar electrons for the ISEE-C spacecraft

<i>Period</i>	<i>Obligations</i>	
04/11/75-12/31/83	FY81	TOTAL \$1,725,719
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, K A	GSFC/Wales, R O	32-Geological Sci
	GSFC/Corngan, J P	

**NAS 5-24445**      **University of California - Berkeley**      **1549**  
Development of instrumentation for an extreme ultraviolet Explorer

<i>Period</i>	<i>Obligations</i>	
02/28/78-04/01/82	FY81 \$224,958	TOTAL \$844,637
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bowyer, C S	GSFC/Willis, S E	11-Astronomy
Lampton, M		
Paresce, F		

**NAS 5-25007**      **University of California - Berkeley**      **1550**  
Microwave and theoretical studies for Cosmic Background Explorer (COBE) satellite

<i>Period</i>	<i>Obligations</i>	
03/01/78-03/01/82	FY81 \$89,600	TOTAL \$293,319
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smoot, G F	GSFC/Mather, J C	11-Astronomy
	GSFC/Donohoe, M J	

**NAS 5-25070**      **University of California - Berkeley**      **1551**  
Provide engineering and consulting services to the space telescope instrument science team

<i>Period</i>	<i>Obligations</i>	
05/20/78-01/31/84	FY81 \$30,000	TOTAL \$116,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
King, I	GSFC/Hobbs, R	11-Astronomy

**NAS 5-25770**      **University of California - Berkeley**      **1552**  
International-Sun-Earth Explorers-A data reduction and analysis for the quasi-electric fields experiment

<i>Period</i>	<i>Obligations</i>	
11/01/79-10/31/81	FY81 \$153,517	TOTAL \$327,380
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mozer, F S	GSFC/Corngan, J P	11-Astronomy

**NAS 5-25892**      **University of California - Berkeley**      **1553**  
Solar X-ray flare experiment for the International Solar Polar Mission

<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/83	FY81	TOTAL \$47,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, D A	GSFC/Porreca, G	11-Astronomy
Lin, R P	GSFC/Cline, T L	

**NAS 5-25980**      **University of California - Berkeley**      **1554**  
International Sun-Earth Explorers-A and -B data reduction and analysis for the energetic particles flux experiment

<i>Period</i>	<i>Obligations</i>	
11/01/79-12/31/81	FY81 \$365,745	TOTAL \$540,745
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, K A	GSFC/Corngan, J P	11-Astronomy

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**NAS 8-32577**      **University of California - Berkeley**      **1555**  
 Spacelab mission 1 experiment 95 far UV observations using the  
 Faust instrument on the first Spacelab mission  
*Period*      *Obligations*  
 05/10/77-02/29/84      **FY81 \$175,397**      **TOTAL \$628,500**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Bowyer, S      MSFC/Marmann, R      11-Astronomy  
 Lampton, M

**NAS 8-33349**      **University of California - Berkeley**      **1556**  
 A survey and detailed studies of selected systems  
*Period*      *Obligations*  
 03/26/79-03/25/80      **FY81**      **TOTAL \$25,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Bowyer, C S      MSFC/Jones, J B, Jr      11-Astronomy

**NAS 8-33357**      **University of California - Berkeley**      **1557**  
 Spatial distribution of FE line emission in the Virgo cluster of  
 galaxies  
*Period*      *Obligations*  
 07/02/79-07/01/80      **FY81**      **TOTAL \$5,342**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Anderson, K A      MSFC/Barnes, J B      11-Astronomy  
 Lea, S M

**NAS 9-14565**      **University of California - Berkeley**      **1558**  
 Study development of improved photointerpretative techniques  
 to wheat identification  
*Period*      *Obligations*  
 05/15/75-11/01/81      **FY81 \$438,000**      **TOTAL \$1,914,203**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Colwell, R N      JSC/Browne, I D      39-Env Sci, NEC

**NCA 2-50001**      **University of California - Berkeley**      **1559**  
 Influence of fluid rheology and air resistance on the behavior of  
 liquid jets and drops  
*Period*      *Obligations*  
 10/01/79-09/30/81      **FY81**      **TOTAL \$30,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Goren, S L      ARC/Altman, R L      12-Chemistry

**NCA 2-50002**      **University of California - Berkeley**      **1560**  
 Primitive photobiological mechanisms of salt transport  
*Period*      *Obligations*  
 10/01/79-09/30/81      **FY81 \$24,511**      **TOTAL \$47,426**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Packer, L      ARC/Klein, H P      51-Biological Sci

**NCA 2-50004**      **University of California - Berkeley**      **1561**  
 Climate change and the history of Greenland  
*Period*      *Obligations*  
 06/01/80-09/01/80      **FY81**      **TOTAL \$4,252**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Granger, O      ARC/Toon, O B      39-Env Sci, NEC

**NCA 2-50006**      **University of California - Berkeley**      **1562**  
 Microwave measurement of snow wetness accumulation  
*Period*      *Obligations*  
 09/01/80-08/31/82      **FY81 \$10,693**      **TOTAL \$17,693**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Angelakos, D      ARC/Linlor, W I      39-Env Sci, NEC

**NCA 2-50101**      **University of California - Berkeley**      **1563**  
 Design and analysis of radiating boundary conditions and  
 difference scheme for nonlinear fluid flow  
*Period*      *Obligations*  
 10/01/80-12/31/81      **FY81 \$15,000**      **TOTAL \$15,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Majda, A      ARC/Warming, R F      21-Mathematics

**NCA 2-50102**      **University of California - Berkeley**      **1564**  
 Dynamics of the rings of Saturn  
*Period*      *Obligations*  
 01/01/81-03/31/82      **FY81 \$8,314**      **TOTAL \$8,314**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Shu, F H      ARC/Cuzzi, J N      11-Astronomy  
 Terebey, S

**NCA 2-50103**      **University of California - Berkeley**      **1565**  
 Evaluation and assessment of methodology for estimating user  
 requirements as a component of the energy needs design study  
*Period*      *Obligations*  
 03/01/81-08/31/81      **FY81 \$7,258**      **TOTAL \$7,258**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Colwell, R N      ARC/Norman, S M      39-Env Sci, NEC

**NCA 2-50905**      **University of California - Berkeley**      **1566**  
 Optimal additives to produce anti-misting fuels  
*Period*      *Obligations*  
 09/15/79-03/31/82      **FY81 \$30,000**      **TOTAL \$60,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Williams, M C      ARC/Altman, R A      12-Chemistry  
 Grens, E A

**NCC 2-36**      **University of California - Berkeley**      **1567**  
 Selected target search for extra-terrestrial intelligence observations  
 using very long base interferometry techniques and pattern  
 recognition studies  
*Period*      *Obligations*  
 10/16/79-10/31/81      **FY81 \$55,945**      **TOTAL \$112,611**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Bowyer, S      ARC/Billingham, J      99-Multi-Discip  
 Tarter, J      ARC/Wolfe, J H

**NCC 2-54**      **University of California - Berkeley**      **1568**  
 Irrigated lands assessments for water management  
*Period*      *Obligations*  
 01/01/80-12/31/81      **FY81 \$136,964**      **TOTAL \$370,513**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Colwell, R N      ARC/Bauer, E H      19-Phys Sci, NEC

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**NCC 2-67**                      **University of California - Berkeley**                      **1569**  
Control and modeling of a CELSS (controlled ecology life support system)

<i>Period</i>	<i>Obligations</i>	
03/01/80-06/30/82	FY81 \$77,991	TOTAL \$154,648
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Auslander, D M	ARC/MacElroy, R D	46-Mech Engr
Spear, R C		
Tomizuka, M		

**NGL 05-003-017**                      **University of California - Berkeley**                      **1575**  
Investigation of high energy solar flare radiation and trapped radiation, including balloon-borne and sounding rocket tests of prototype detectors

<i>Period</i>	<i>Obligations</i>	
04/08/63-07/31/82	FY81 \$159,000	TOTAL \$2,127,942
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, K A	HQ-SC/Mayr, H G	19-Phys Sci, NEC
	HQ-SC/Schmerling, E R	

**NCC 2-86**                      **University of California - Berkeley**                      **1570**  
Changes in cortisol and antidiuretic hormone

<i>Period</i>	<i>Obligations</i>	
06/01/80-10/31/81	FY81 \$131,358	TOTAL \$151,327
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stark, L	ARC/Ellis, S	99-Multi-Discip

**NGL 05-003-272**                      **University of California - Berkeley**                      **1576**  
Research on radiation physics

<i>Period</i>	<i>Obligations</i>	
03/01/68-02/28/82	FY81 \$25,000	TOTAL \$1,196,380
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Townes, C H	HQ-SC/Boggess, N W	11-Astronomy
	HQ-SC/Weiler, E J	

**NCC 2-105**                      **University of California - Berkeley**                      **1571**  
Solar wind parameters beyond 1AU as seen by pioneer 10 and 11

<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/81	FY81 \$46,598	TOTAL \$46,598
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, K A	ARC/Barnes, A	13-Physics
Kayser, S E	ARC/Mihalov, J D	

**NGL 05-003-286**                      **University of California - Berkeley**                      **1577**  
Orbiting spacecraft infrared spectrometer development for terrestrial and laboratory study of planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
08/08/68-08/31/79	FY81	TOTAL \$1,004,004
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pimental, G C	HQ-SL/Fellows, R F	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NCC 2-140**                      **University of California - Berkeley**                      **1572**  
Ignition properties of anti-misting fuels

<i>Period</i>	<i>Obligations</i>	
07/01/81-09/30/81	FY81 \$5,469	TOTAL \$5,469
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Grens, E A	ARC/Altman, R L	12-Chemistry

**NGL 05-003-404**                      **University of California - Berkeley**                      **1578**  
Integrated study of Earth resources in the state of California using remote sensing techniques

<i>Period</i>	<i>Obligations</i>	
07/13/70-12/31/79	FY81	TOTAL \$4,093,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Colewell, R N	HQ-ET/Vitale, J A	39-Env Sci, NEC
	ARC/Arno, R D	

**NCC 2-142**                      **University of California - Berkeley**                      **1573**  
Detection, identification, and precise location of infrared objects

<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$56,035	TOTAL \$56,035
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Heiles, C E	ARC/Ericksen, E F	11-Astronomy
	ARC/Reynolds, R T	

**NGL 05-003-409**                      **University of California - Berkeley**                      **1579**  
Lunar sample analysis

<i>Period</i>	<i>Obligations</i>	
01/26/71-01/31/82	FY81 \$180,000	TOTAL \$1,294,192
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reynolds, J H	JSC/Warner, J L	13-Physics

**NGL 05-003-003**                      **University of California - Berkeley**                      **1574**  
Study of extraterrestrial life using reflection spectra as a basis

<i>Period</i>	<i>Obligations</i>	
08/01/60-10/31/81	FY81 \$125,000	TOTAL \$4,260,081
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Calvin, M	HQ-SB/Devincenzi, D L	
Burlingame, A L		32-Geological Sci

**NGL 05-003-497**                      **University of California - Berkeley**                      **1580**  
Research in space sciences

<i>Period</i>	<i>Obligations</i>	
04/05/72-03/31/83	FY81 \$375,000	TOTAL \$2,360,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Price, P B	HQ-SP/Taylor, T C	99-Multi-Discip
	HQ-SP/Heninger, L W	

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**NGR 05-003-239 University of California - Berkeley 1581**  
Auroral zone rocket studies of electric fields and precipitating particles

<i>Period</i>	<i>Obligations</i>	
08/26/68-02/28/81	FY81	TOTAL \$1,423,420
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mozer, F S	GSFC/Guidotti, J G	13-Physics
Anderson, K A		

**NGR 05-003-376 University of California - Berkeley 1582**  
High resolution studies of cosmic rays and solar particles

<i>Period</i>	<i>Obligations</i>	
04/16/71-10/31/81	FY81 \$100,000	TOTAL \$978,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Price, P B	HQ-SC/Gilman, D A	11-Astronomy
	HQ-SC/Holt, S S	

**NGR 05-003-450 University of California - Berkeley 1583**  
Study of X-ray emission from galactic and extragalactic sources with emphasis on soft and ultra-soft wavelengths

<i>Period</i>	<i>Obligations</i>	
05/28/71-11/30/81	FY81 \$177,118	TOTAL \$1,481,870
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bowyer, C S	GSFC/Guidotti, J G	11-Astronomy
	HQ-SC/Weiler, E J	

**NGR 05-003-451 University of California - Berkeley 1584**  
Research in aeronautics and air transportation

<i>Period</i>	<i>Obligations</i>	
03/30/71-10/31/81	FY81 \$28,885	TOTAL \$696,735
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Holt, M	ARC/Lee, G	41-Aero Engr

**NGR 05-003-452 University of California - Berkeley 1585**  
Infrared spectra of planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
02/18/72-06/30/82	FY81 \$59,900	TOTAL \$485,284
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Townes, C H	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

**NGR 05-003-460 University of California - Berkeley 1586**  
The chemistry of living systems

<i>Period</i>	<i>Obligations</i>	
07/21/71-10/31/81	FY81 \$82,500	TOTAL \$813,803
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jukes, J H	HQ-SB/Devincenzi, D L	12-Chemistry

**NGR 05-003-511 University of California - Berkeley 1587**  
Spectrographic observation of infrared lines

<i>Period</i>	<i>Obligations</i>	
03/01/73-10/31/81	FY81 \$64,500	TOTAL \$415,715
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Townes, C H	ARC/Haughney, L C	11-Astronomy

**NGR 05-003-513 University of California - Berkeley 1588**  
Heavy ion fragment experiments at the bevatron

<i>Period</i>	<i>Obligations</i>	
10/01/73-09/30/81	FY81 \$110,000	TOTAL \$1,069,520
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Heckman, H H	HQ-SC/Kaluzienski, L J	11-Astronomy
	HQ-SC/Holt, S S	

**NGR 05-003-553 University of California - Berkeley 1589**  
High energy primary cosmic radiation measured by superconducting magnetic spectrometer

<i>Period</i>	<i>Obligations</i>	
05/10/73-06/30/81	FY81	TOTAL \$1,850,164
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Buffington, A	HQ-SC/Kaluzienski, L J	11-Astronomy

**NGR 05-003-578 University of California - Berkeley 1590**  
Theoretical X-ray and gamma-ray astronomy

<i>Period</i>	<i>Obligations</i>	
08/01/73-08/31/82	FY81 \$45,238	TOTAL \$314,011
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Silk, J I	HQ-SC/Weiler, E J	11-Astronomy
	HQ-SC/Bogges, N W	

**NGT 05-003-800 University of California - Berkeley 1591**  
Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$9,600	TOTAL \$9,600
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shu, F H	HQ-LC/Carter, C H	21-Mathematics

**NGT 05-003-801 University of California - Berkeley 1592**  
Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$10,920	TOTAL \$10,920
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Auslander, D M	HQ-LC/Carter, C H	44-Civil Engr

**NSG 1637 University of California - Berkeley 1593**  
Integrated-optics cadmium/telluride electro-optic modulator for the 10 UM region

<i>Period</i>	<i>Obligations</i>	
08/01/79-09/30/82	FY81	TOTAL \$103,320
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chiao, R Y	LARC/Sachse, G W	13-Physics

**NSG 3227 University of California - Berkeley 1594**  
Study of the mechanism of flashback

<i>Period</i>	<i>Obligations</i>	
10/01/78-01/02/82	FY81	TOTAL \$122,445
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Oppenheim, A K	LERC/Marek, C J	41-Aero Engr

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**NSG 7127**                      **University of California - Berkeley**                      **1595**  
Map lunar surface remnant magnetic fields and to develop the  
theory of solar winds cavity  
*Period*    *Obligations*  
03/25/75-03/31/82                      FY81 \$25,848                      TOTAL \$336,143  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Anderson, K A                      HQ-SL/Quaide, W L                      39-Env Sci, NEC

**NSG 7152**                      **University of California - Berkeley**                      **1596**  
Studies of solar system objects with the new Hat Creek millimeter  
wave length radio interferometer  
*Period*    *Obligations*  
07/01/75-10/31/81                      FY81 \$32,399                      TOTAL \$205,537  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Welch, W J                      HQ-SL/Brunk, W E                      11-Astronomy  
HQ-SL/Murphy, R E

**NSG 7205**                      **University of California - Berkeley**                      **1597**  
Far infrared all-sky survey  
*Period*    *Obligations*  
02/01/76-08/31/82                      FY81 \$110,000                      TOTAL \$237,500  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Richards, P L                      HQ-SC/Boggess, N W                      11-Astronomy  
HQ-SC/Weiler, E J

**NSG 7220**                      **University of California - Berkeley**                      **1598**  
Remote sensing to selected problems within the state of  
California  
*Period*    *Obligations*  
05/01/76-04/30/83                      FY81                      TOTAL \$1,090,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Colwell, R N                      HQ-ET/Vitale, J A                      39-Env Sci, NEC

**NSG 7262**                      **University of California - Berkeley**                      **1599**  
Primate hemodynamics and metabolism under conditions of  
weightlessness  
*Period*    *Obligations*  
07/01/76-10/21/81                      FY81 \$65,000                      TOTAL \$337,641  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Pace, N.                      HQ-SB/Halstead, T W                      51-Biological Sci

**NSG 7336**                      **University of California - Berkeley**                      **1600**  
Gravity, body mass, and composition and metabolic rate  
*Period*    *Obligations*  
12/01/76-11/31/81                      FY81 \$98,000                      TOTAL \$303,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Pace, N.                      HQ-SB/Halstead, T W                      51-Biological Sci  
Smith, A H

**NSG 7401**                      **University of California - Berkeley**                      **1601**  
Theoretical study of equatorial F region irregularities  
*Period*    *Obligations*  
11/01/77-10/31/80                      FY81                      TOTAL \$104,874  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hudson, M R                      HQ-SC/Schmerling, E R                      19-Phys Sci, NEC

**NSG 7522**                      **University of California - Berkeley**                      **1602**  
Social issues and implications of remote sensing applications  
Paradigms of technology transfer  
*Period*    *Obligations*  
01/01/79-08/31/82                      FY81 \$140,000                      TOTAL \$408,125  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Colwell, R N                      HQ-ET/Tuyahov, A J                      79-Soc Sci, NEC

**NSG 7527**                      **University of California - Berkeley**                      **1603**  
A balloon-borne high resolution X-and gamma-ray spectrometer  
*Period*    *Obligations*  
02/01/79-01/31/82                      FY81 \$25,000                      TOTAL \$77,837  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lin, R P                      HQ-SC/Chipman, E G                      13-Physics  
Anderson, K A

**NSG 7592**                      **University of California - Berkeley**                      **1604**  
A balloon-borne high resolution X and gamma-ray spectrometer  
*Period*    *Obligations*  
05/01/79-01/31/82                      FY81 \$20,200                      TOTAL \$64,189  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lin, R P                      HQ-SC/Holt, S S                      11-Astronomy  
HQ-SC/Kaluzienski, L J

**NAG 2-129**                      **University of California - Davis**                      **1605**  
Interaction of organic vapors and carbon containing synthetic  
fabrics  
*Period*    *Obligations*  
10/01/81-09/30/82                      FY81 \$20,499                      TOTAL \$20,499  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Smith, J M                      ARC/Cagliostro, D E                      39-Env Sci, NEC

**NCA 2-180101**                      **University of California - Davis**                      **1606**  
Venusian saltation  
*Period*    *Obligations*  
06/15/81-06/15/82                      FY81 \$18,957                      TOTAL \$18,957  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
White, B R                      ARC/Pollack, J B                      32-Geological Sci

**NCA 2-180903**                      **University of California - Davis**                      **1607**  
Wind-tunnel determination of particle to fluid speed for saltating  
flow  
*Period*    *Obligations*  
06/15/79-06/15/81                      FY81                      TOTAL \$37,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
White, B R                      ARC/Pollack, J B                      46-Mech Engr

**NCA 2-180905**                      **University of California - Davis**                      **1608**  
Development of a special purpose system for assessment of 24-hour  
biorhythm desynchronization and its effects on performance and  
psychological state  
*Period*    *Obligations*  
07/01/79-09/30/81                      FY81 \$9,996                      TOTAL \$38,796  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Chapman, L F                      ARC/Winget, C M                      51-Biological Sci



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**NCC 2-20**                      **University of California - Davis**                      **1609**  
Improvement in mechanical properties of low conductivity carbon  
fibers by impregnating with polymers and metals

<i>Period</i>	<i>Obligations</i>	
09/01/79-12/31/81	FY81 \$22,822	TOTAL \$73,822
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Needles, H L	ARC/Fish, R H	12-Chemistry
Varma, D S	ARC/Caghiostro, D E	

**NCC 2-99**                      **University of California - Davis**                      **1610**  
Selection of crop varieties for efficient production using urea,  
ammonia, nitrite, and nitrate in the closed environmental life  
support system

<i>Period</i>	<i>Obligations</i>	
10/01/80-11/30/81	FY81 \$77,282	TOTAL \$77,282
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Huffaker, R C	ARC/Zill, L P	55-Agriculture Sci
Rains, D W		

**NSG 2234**                      **University of California - Davis**                      **1611**  
Thermoregulation in rats Effects of hypergravity and norepineph-  
rine

<i>Period</i>	<i>Obligations</i>	
07/01/77-02/28/82	FY81 \$26,600	TOTAL \$89,600
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Horowitz, J M	HQ-SB/Halstead, T W	51-Biological Sci

**NSG 5092**                      **University of California - Davis**                      **1612**  
Use of remote data in hydrologic engineering models

<i>Period</i>	<i>Obligations</i>	
02/01/76-09/30/80	FY81	TOTAL \$180,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Algazi, V R	GSFC/Rango, A	39-Env Sci, NEC
	GSFC/Salomonson, V V	

**NSG 7493**                      **University of California - Davis**                      **1613**  
Avian embryonic development in hyperdynamic environments

<i>Period</i>	<i>Obligations</i>	
10/01/78-10/31/81	FY81 \$50,000	TOTAL \$142,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, A H	HQ-SB/Halstead, T W	51-Biological Sci
Abbott, U K		

**NCA 2-280001**                      **University of California - Hastings Col**                      **1614**  
A joint venture between the NASA-ARC and the Hastings College  
of law to encourage and support basic, exploratory and applied  
legal research of mutual benefit to the parties

<i>Period</i>	<i>Obligations</i>	
09/25/80-06/30/82	FY81 \$147,459	TOTAL \$217,459
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Henke, D F	ARC/Glazer, J H	99-Multi-Discip
Kerr, T R	ARC/Brekke, D G	

**NAG 2-107**                      **University of California - Irvine**                      **1615**  
Mitochondrial and contractile function in disuse atrophied  
skeletal muscle

<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$58,000	TOTAL \$58,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Baldwin, K M	ARC/Ellis, S	51-Biological Sci

**NAG 3-176**                      **University of California - Irvine**                      **1616**  
Effect of liquid droplets on turbulence structure in a round gaseous  
jet

<i>Period</i>	<i>Obligations</i>	
06/01/81-03/31/83	FY81 \$89,973	TOTAL \$89,973
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Elghobashi, S	LERC/Jacina, R R	46-Mech Engr

**NAGW 93**                      **University of California - Irvine**                      **1617**  
Research in solar plasma theory

<i>Period</i>	<i>Obligations</i>	
06/01/80-07/14/82	FY81 \$80,000	TOTAL \$156,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Vanhoven, G	HQ-SC/Birmingham, T J	13-Physics
	HQ-SC/Newton, G P	

**NAGW 109**                      **University of California - Irvine**                      **1618**  
A theoretical study of the X-ray emission from clusters of  
galaxies

<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/81	FY81 \$11,046	TOTAL \$11,046
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tucker, W H	HQ-SC/Kaluzienski, L J	11-Astronomy
	HQ-SC/Holt, S S	

**NAGW 212**                      **University of California - Irvine**                      **1619**  
Models of energy transformation during the early evolution of  
life

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$74,227	TOTAL \$74,227
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lanyi, T K	HQ-SB/Devincenzi, D L	51-Biological Sci

**NAS 2-10522**                      **University of California - Irvine**                      **1620**  
Life science experiment ARC 781-127, effect of zero-gravity on  
biochemical and metabolic properties of skeletal muscle

<i>Period</i>	<i>Obligations</i>	
01/15/80-09/30/81	FY81 \$1,010	TOTAL \$2,877
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Baldwin, K M	ARC/Ferandin, J A	51-Biological Sci
	ARC/Sebesta, P D	

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NAS 3-21963**      **University of California - Irvine**      **1621**  
Development and evaluation of an ion-beam sputter-ventilated  
ventricular catheter  
*Period*      *Obligations*  
09/27/79-06/13/81      **FY81**      **TOTAL \$45,463**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Foltz, E L      LERC/Weigand, A J      56-Medical Sciences

**NGR 05-041-012**      **University of California - Irvine**      **1622**  
Diagnosis of preclinical viral illness and prophylaxis against viral  
disease  
*Period*      *Obligations*  
07/13/71-11/30/81      **FY81 \$38,000**      **TOTAL \$352,342**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Tilles, J G      ARC/Mandel, A D      56-Medical Sciences

**NSG 7208**      **University of California - Irvine**      **1623**  
Gas phase reactions of chlorine and fluorine compound of interest  
for stratospheric chemistry  
*Period*      *Obligations*  
01/01/76-09/30/82      **FY81 \$170,392**      **TOTAL \$587,028**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Molina, M J      HQ-EB/Watson, R T      31-Atmos Sci  
HQ-EB/Tilford, S G

**NSG 7375**      **University of California - Irvine**      **1624**  
Coronal plasma structures  
*Period*      *Obligations*  
06/01/77-10/31/81      **FY81 \$50,071**      **TOTAL \$175,029**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Van Hoven, G      HQ-SC/Chipman, E      13-Physics

**NSG 7472**      **University of California - Irvine**      **1625**  
Research on some properties of nearly perfect crystals at very  
low temperatures  
*Period*      *Obligations*  
07/01/78-06/30/80      **FY81**      **TOTAL \$23,397**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Wallis, R F      HQ-RT/Whiting, E E      13-Physics

**NAG 2-41**      **University of California - Los Angeles**      **1626**  
Graduate student researchers program simulation  
*Period*      *Obligations*  
05/01/80-06/30/82      **FY81 \$20,521**      **TOTAL \$37,906**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Carlyle, J W      ARC/Raby, J S      22-Computer Science

**NAG 2-116**      **University of California - Los Angeles**      **1627**  
A study of aeroelastic and structural dynamic effects in multi  
rotor systems with application to hybrid heavy lift vehicles  
*Period*      *Obligations*  
05/01/81-04/30/82      **FY81 \$51,000**      **TOTAL \$51,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Friedmann, P P      ARC/Miura, H      41-Aero Engr  
ARC/Talbot, P D

**NAG 3-69**      **University of California - Los Angeles**      **1628**  
Selection and testing of diaphragm materials for high temperature  
pressure transducers  
*Period*      *Obligations*  
05/15/80-08/14/81      **FY81**      **TOTAL \$60,280**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
MacKengie, J D      LERC/Barranger, J P      47-Materials Engr

**NAG 3-132**      **University of California - Los Angeles**      **1629**  
Data flow computing approach in high speed digital simulation  
*Period*      *Obligations*  
12/15/80-12/14/81      **FY81 \$49,215**      **TOTAL \$49,215**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ercegovac, M D      LERC/Miller, E      22-Computer Science  
Karplus, W J      LERC/Szuch, J R

**NAG 5-112**      **University of California - Los Angeles**      **1630**  
Observations of selected astronomical emission lines  
*Period*      *Obligations*  
10/01/80-09/30/82      **FY81**      **TOTAL \$3,574**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Plavec, M J      GSFC/Corrigan, J P      11-Astronomy

**NAG 5-116**      **University of California - Los Angeles**      **1631**  
Observations of interstellar cloud densities and detection of  
interstellar neutral chlorine  
*Period*      *Obligations*  
10/01/80-08/31/82      **FY81**      **TOTAL \$3,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Jura, M A      GSFC/Corrigan, J P      11-Astronomy

**NAG 5-152**      **University of California - Los Angeles**      **1632**  
Thermal isotacy in the world's oceans  
*Period*      *Obligations*  
04/01/81-03/31/82      **FY81 \$36,901**      **TOTAL \$36,901**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Schubert, G      GSFC/Welker, J      32-Geological Sci  
Ernst, W G      GSFC/McAdoo, D C

**NAG 5-210**      **University of California - Los Angeles**      **1633**  
Reddening measurements for Seyfert 1 galaxies  
*Period*      *Obligations*  
11/01/81-10/31/82      **FY81 \$7,240**      **TOTAL \$7,240**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Grandi, S A      GSFC/Boggess, A      11-Astronomy

**NAGW 41**      **University of California - Los Angeles**      **1634**  
High pressure cosmochemistry applied to major planetary  
interiors  
*Period*      *Obligations*  
03/01/80-02/28/81      **FY81**      **TOTAL \$6,399**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Stevenson, D J      HQ-SL/Quaide, W L      32-Geological Sci  
HQ-SL/French, B M

## NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

<b>NAGW 74</b>	<b>University of California - Los Angeles</b>	<b>1635</b>
<b>A three dimensional model of bow shock location and motion</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/80-06/30/82</b>	<b>FY81 \$13,461</b>	<b>TOTAL \$32,317</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Holzer, R E</b>	<b>HQ-SC/Mayr, H G</b>	<b>19-Phys Sci, NEC</b>
	<b>HQ-SC/Schmerling, E R</b>	

<b>NAGW 78</b>	<b>University of California - Los Angeles</b>	<b>1636</b>
<b>Space plasma physics theory and simulation</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/80-06/30/82</b>	<b>FY81 \$188,000</b>	<b>TOTAL \$359,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Abdulla, M A</b>	<b>HQ-SC/Birmingham, T J</b>	<b>13-Physics</b>
	<b>HO-SC/Newton, G P</b>	

<b>NAGW 80</b>	<b>University of California - Los Angeles</b>	<b>1637</b>
<b>Theoretical studies of extragalactic grains</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/01/80-09/30/82</b>	<b>FY81</b>	<b>TOTAL \$33,377</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Jura, M</b>	<b>HQ-SC/Weiler, E J</b>	<b>11-Astronomy</b>
	<b>HQ-SC/Bogges, N W</b>	

<b>NAGW 87</b>	<b>University of California - Los Angeles</b>	<b>1638</b>
Theoretical studies of the plasma environments of Jupiter and Saturn, their magnetospheres and their satellites		
<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY81 \$70,000	TOTAL \$138,484
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Siscoe, G L	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

<b>NAGW 104</b>	<b>University of California - Los Angeles</b>	<b>1639</b>
<b>High-pressure cosmochemistry applied to major planetary interiors</b>		
<b>Experimental studies</b>		
<i>Period</i>	<i>Obligations</i>	
<b>11/01/80-10/31/81</b>	<b>FY81 \$55,552</b>	<b>TOTAL \$55,552</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Nicol, M F</b>	<b>HQ-SL/Quaide, W L</b>	<b>11-Astronomy</b>
	<b>HQ-SL/French, B M</b>	

<b>NAGW 162</b>	<b>University of California - Los Angeles</b>	<b>1640</b>
<b>Studies of the Jovian magnetopause and boundary layer</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/81-03/31/82</b>	<b>FY81 \$32,000</b>	<b>TOTAL \$32,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Walker, R J</b>	<b>HQ-SC/Mayr, H G</b>	<b>13-Physics</b>
<b>Kivelson, M</b>		

<b>NAGW 180</b>	<b>University of California - Los Angeles</b>	<b>1641</b>
<b>Turbulence in plasma with magnetic null points</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/81-03/31/82</b>	<b>FY81 \$50,000</b>	<b>TOTAL \$50,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Stenzel, R L</b>	<b>HQ-SC/Mayr, H G</b>	<b>19-Phys Sci, NEC</b>
	<b>HO-SC/Schmerling, E R</b>	

NAS 1-16674		University of California - Los Angeles	1642
Stratospheric calibration of the quartz crystal microbalance (QCM)			
<i>Period</i>		<i>Obligations</i>	
05/26/81-05/25/82	FY81	\$15,200	TOTAL \$15,200
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Friedlander, S K	LARC/Woods, D C		31-Atmos Sci
Hering, S V			

NAS 2-9131	University of California - Los Angeles	1643
Interdisciplinary scientist, Pioneer Venus program		
<i>Period</i>	<i>Obligations</i>	
02/09/76-10/01/82	FY81	TOTAL \$35,642
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schubert, G	ARC/Fimmel, R O	11-Astronomy
	ARC/Dver, J	

<b>NAS 2-9491</b>	<b>University of California - Los Angeles</b>	<b>1644</b>
<b>Pioneer Venus data analysis of magnetic fields experiment</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/01/77-09/30/81</b>	<b>FY81 \$264,054</b>	<b>TOTAL \$844,027</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Russell, C T</b>	<b>ARC/Fimmel, R O</b>	<b>31-Atmos Sci</b>
	<b>ARC/Dyer, J W</b>	

NAS 5-25039		University of California - Los Angeles	1645
Theory formulation and analysis support for the Dynamics Explorer (DE) project			
<i>Period</i>		<i>Obligations</i>	
08/08/78-02/28/83	FY81	\$43,000	TOTAL \$53,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Coroniti, F V	GSFC/Bullock, G		13-Physics

NAS 5-25657		University of California - Los Angeles		1646
Space telescope/high resolution spectrograph interstellar medium studies				
Period		Obligations		
04/25/79-01/31/82	FY81	\$4,000	TOTAL \$21,000	
Prin Invest	NASA Tech Officer	CASE Category		
Jura, M A	GSFC/Liberatore, F J	11-Astronomy		

NAS 5-25772		University of California - Los Angeles		1647
International Sun-Earth Explorers A and B data reduction and analysis for the magnetic field investigation				
Period		Obligations		
11/01/79-10/31/81	FY81	\$313,423	TOTAL \$649,716	
Prn Invest	NASA Tech Officer		CASE Category	
Russell, C T	GSFC/Corrigan, J P	11-Astronomy		

<b>NAS 8-33115</b> <b>University of California - Los Angeles</b> <b>1648</b>	
<b>Experiment for materials processing in space entitled ultra pure metals preparation in space</b>	
<i>Period</i>	<i>Obligations</i>
<b>08/07/78-12/07/79</b>	<b>FY81      TOTAL \$67,114</b>
<i>Prin Invest</i>	<i>NASA Tech Officer      CASE Category</i>
<b>Bunshah, R F</b>	<b>MSFC/Williams, J R 47-Materials Engr</b>
	<b>MSFC/Oran, W A</b>

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAS 8-33353**      **University of California - Los Angeles**      **1649**  
X-ray imagery of nearby QSO 0241+622  
*Period*      *Obligations*  
06/05/79-06/04/80      **FY81**      **TOTAL \$7,990**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Margon, B H      MSFC/Jones, J B , Jr      11-Astronomy

**NAS 9-16047**      **University of California - Los Angeles**      **1650**  
Life Science Flight Experiment pulmonary blood flow  
*Period*      *Obligations*  
01/17/80-01/31/82      **FY81**      **TOTAL \$10,000**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Wiberg, D M      JSC/French, B O      59-Life Sci, NEC

**NASW 3416**      **University of California - Los Angeles**      **1651**  
Support of the conference on mathematical problems of the  
thermal and dynamic state of the Earth  
*Period*      *Obligations*  
06/15/80-09/30/80      **FY81**      **TOTAL \$13,999**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Knopoff, L      HQ-ER/Murphy, J P      32-Geological Sci  
Jones, G M

**NCA 2-390001**      **University of California - Los Angeles**      **1652**  
Characterization of esteropeptidases in rat tissues by gel  
electrophoresis  
*Period*      *Obligations*  
10/01/79-03/31/82      **FY81 \$25,016**      **TOTAL \$47,958**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Parlow, A      ARC/Ellis, S      51-Biological Sci

**NCA 2-390002**      **University of California - Los Angeles**      **1653**  
Numerical solution of transonic flow problems  
*Period*      *Obligations*  
10/01/79-10/31/81      **FY81 \$21,000**      **TOTAL \$36,000**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Osher, S      ARC/Goorjian, P      21-Mathematics  
Engquist, B      ARC/Holst, T

**NCC 2-64**      **University of California - Los Angeles**      **1654**  
Vapor-liquid phase separator  
*Period*      *Obligations*  
03/01/80-10/31/83      **FY81 \$25,000**      **TOTAL \$47,236**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Frederking, T H      ARC/Vorreiter, J W      46-Mech Engr  
ARC/Kittel, P

**NCC 2-104**      **University of California - Los Angeles**      **1655**  
Biological control system for extracellular fluid volume regula-  
tion  
*Period*      *Obligations*  
11/01/80-10/31/81      **FY81 \$90,000**      **TOTAL: \$90,000**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Bricker, N S      ARC/Sandler, H      59-Life Sci, NEC

**NCC 2-156**      **University of California - Los Angeles**      **1656**  
High-temperature absorption spectra  
*Period*      *Obligations*  
10/01/81-09/30/82      **FY81 \$37,583**      **TOTAL \$37,583**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Heller, E J      ARC/Arnold, J O      12-Chemistry  
ARC/Jaffe, R L

**NGL 05-007-002**      **University of California - Los Angeles**      **1657**  
Theoretical evaluation of the internal structures and atmospheres  
of planets and the Moon  
*Period*      *Obligations*  
01/01/62-12/31/81      **FY81 \$55,376**      **TOTAL \$989,666**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Kaula, W M      HQ-SL/Quaide, W L      32-Geological Sci  
HQ-SL/French, B E

**NGL 05-007-004**      **University of California - Los Angeles**      **1658**  
Theoretical and experimental investigations of particles and fields  
in space, including construction of prototype instrumentation  
*Period*      *Obligations*  
03/01/62-10/01/81      **FY81 \$122,000**      **TOTAL \$3,009,554**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Coleman, P J , Jr      HQ-SC/Mayr, H G      39-Env Sci, NEC  
HQ-SC/Schmerling, E R

**NGL 05-007-190**      **University of California - Los Angeles**      **1659**  
Theoretical space plasma physics  
*Period*      *Obligations*  
06/27/68-09/30/81      **FY81 \$54,156**      **TOTAL \$743,463**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Kennel, C F      HQ-SC/Mayr, H G      19-Phys Sci, NEC  
HQ-SC/Schmerling, E R

**NGL 05-007-367**      **University of California - Los Angeles**      **1660**  
Lunar sample analysis  
*Period*      *Obligations*  
06/30/72-01/31/82      **FY81 \$73,000**      **TOTAL \$726,570**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Wasson, J T      JSC/Warner, J L      12-Chemistry

**NGR 05-007-221**      **University of California - Los Angeles**      **1661**  
Nature and changes of organic matter in deep ocean cores  
*Period*      *Obligations*  
08/08/69-12/31/81      **FY81 \$85,284**      **TOTAL \$741,296**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Kaplan, I R      HQ-SB/Devincenzi, D L      32-Geological Sci

**NGR 05-007-289**      **University of California - Los Angeles**      **1662**  
Lunar sample analysis  
*Period*      *Obligations*  
12/29/70-01/31/82      **FY81 \$63,000**      **TOTAL \$775,709**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Kaplan, I R      JSC/Warner, J L      13-Physics

**NASA'S UNIVERSITY PROGRAM  
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<b>NGR 05-007-317 University of California - Los Angeles 1663</b>			
Photogeologic interpretation of Mariner Mars 1969 imagery			
<i>Period</i>	<i>Obligations</i>		
03/09/71-03/14/82	FY81 \$30,965	TOTAL	\$192,765
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Schubert, G	HQ-SL/Boyce, J M	32-Geological Sci	
	HQ-SL/Holt, H E		
<b>NGR 05-007-328 University of California - Los Angeles 1664</b>			
Numerical modeling of the global atmosphere and the world oceans			
<i>Period</i>	<i>Obligations</i>		
08/15/71-11/30/81	FY81 \$25,000	TOTAL	\$520,649
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Suarez, J	GSFC/Halem, M	31-Atmos Sci	
<b>NGR 05-007-329 University of California - Los Angeles 1665</b>			
Elemental variations in genetically related meteorites			
<i>Period</i>	<i>Obligations</i>		
04/27/71-02/28/82	FY81 \$121,101	TOTAL	\$636,096
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Wasson, J T	HQ-SL/French, B M	32-Geological Sci	
	HQ-SL/Quaide, W L		
<b>NGR 05-007-351 University of California - Los Angeles 1666</b>			
Correlative studies of Apollo 15 and 16 satellite magnetometer data with the Explorer 35 and lunar surface magnetometer data			
<i>Period</i>	<i>Obligations</i>		
05/25/72-01/31/82	FY81 \$50,000	TOTAL	\$806,633
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Coleman, P J, Jr	HQ-SL/Quaide, W L	32-Geological Sci	
	HQ-SL/French, B E		
<b>NGR 05-007-407 University of California - Los Angeles 1667</b>			
Paleobiologic studies of the antiquity and Precambrian evolution of life			
<i>Period</i>	<i>Obligations</i>		
04/10/73-05/31/82	FY81 \$57,528	TOTAL	\$323,626
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Schopf, J W	HQ-SB/Devincenzi, D L	32-Geological Sci	
<b>NGR 05-007-418 University of California - Los Angeles 1668</b>			
Utricular influences on visual motor control research			
<i>Period</i>	<i>Obligations</i>		
09/01/73-02/28/82	FY81	TOTAL	\$161,023
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Markham, C H	ARC/Daunton, N G	54-Env Biology	
<b>NSG 1490 University of California - Los Angeles 1669</b>			
Fundamental studies of methods for structural synthesis			
<i>Period</i>	<i>Obligations</i>		
02/01/80-01/31/84	FY81 \$95,000	TOTAL	\$361,699
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Schmit, L A, Jr	LARC/Sobieski, J	49-Engr, NEC	
	LARC/Walsh, J L		
<b>NSG 1578 University of California - Los Angeles 1670</b>			
Response studies of rotors and rotor blades with applications to aeroelastic tailoring			
<i>Period</i>	<i>Obligations</i>		
12/01/78-11/30/81	FY81 \$72,148	TOTAL	\$196,177
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Friedmann, P	LARC/Young, W H	41-Aero Engr	
<b>NSG 2290 University of California - Los Angeles 1671</b>			
Research program in jet/surface interactions			
<i>Period</i>	<i>Obligations</i>		
11/01/77-10/31/83	FY81 \$50,000	TOTAL	\$100,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Meecham, W C	ARC/Soderman, P	41-Aero Engr	
<b>NSG 3116 University of California - Los Angeles 1672</b>			
Forecast of future aviation fuels			
<i>Period</i>	<i>Obligations</i>		
08/01/76-10/01/80	FY81	TOTAL	\$308,660
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Liu, C Y	LERC/Friedman, R	41-Aero Engr	
<b>NSG 3236 University of California - Los Angeles 1673</b>			
Investigations of the interaction between a grazing flow over a Helmholtz resonator orifice and the acoustically induced velocity in it			
<i>Period</i>	<i>Obligations</i>		
11/14/78-11/19/81	FY81	TOTAL	\$93,352
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Charwat, A F	LERC/Rice, E J	13-Physics	
	LERC/Baumeister, K J		
<b>NSG 4015 University of California - Los Angeles 1674</b>			
Modelling, identification and control with applications to flight vehicles			
<i>Period</i>	<i>Obligations</i>		
02/01/78-01/31/84	FY81 \$46,975	TOTAL	\$237,725
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Balakrishnan, A V	DFRC/Iliff, K W	41-Aero Engr	
<b>NSG 4024 University of California - Los Angeles 1675</b>			
Models for numerical simulation of gravity waves and clear air turbulence formation			
<i>Period</i>	<i>Obligations</i>		
05/01/79-02/28/82	FY81 \$62,585	TOTAL	\$153,171
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Wurtele, M G	DFRC/Ehernberger, L J	31-Atmos Sci	
Sharman, R D			
<b>NSG 5169 University of California - Los Angeles 1676</b>			
Physical conditions, abundances and chemistry in diffuse interstellar clouds			
<i>Period</i>	<i>Obligations</i>		
03/14/77-11/13/80	FY81	TOTAL	\$10,573
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Jura, M A	GSFC/Kupperian, J E, Jr	11-Astronomy	

<b>NSG 5190</b>	<b>University of California - Los Angeles</b>	<b>I677</b>
Energetic particle precipitation effects on stratospheric and mesospheric composition and dynamics		
<i>Period</i>	<i>Obligations</i>	
07/18/77-08/31/80	FY81	TOTAL \$53,185
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Thorne, R M	GSFC/Reed, E I	31-Atmos Sci
Siscoe, G L		
Venkateswaran, S V		

<b>NSG 5263</b>	<b>University of California - Los Angeles</b>		<b>1678</b>
<b>Earth dynamics analyses</b>			
<i>Period</i>	<i>Obligations</i>		
03/15/78-04/14/82	FY81	\$50,128	<b>TOTAL \$248,722</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Kaula, W M	GSFC/Welker, J		32-Geological Sci
Shubert, G			

NSG 5272		University of California - Los Angeles		1679
Problems of mass loss and mass transfer in close binary systems				
<i>Period</i>		<i>Obligations</i>		
05/01/78-03/31/82	FY81	\$28,800	TOTAL	\$60,799
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Playec. M	GSEC/Bogges, A		11-Astronomy	

<b>NSG 5351</b>	<b>University of California - Los Angeles</b>	<b>1680</b>
Investigation of the wayside boundary region plasma and magnetic field		
<i>Period</i>		<i>Obligations</i>
05/01/79-12/31/81	<b>FY81</b>	<b>TOTAL \$60,523</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Siscoe, G L	GSFC/Wende, C	32-Geological Sci

NSG 5358		University of California - Los Angeles		1681
Ultraviolet observations of high excitation planetary nebulae				
<i>Period</i>		<i>Obligations</i>		
05/09/79-05/08/82	FY81	\$11,200	TOTAL	\$25,434
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Aller, L H	GSFC/Boggess, A		11-Astronomy	

NSG 5377	University of California - Los Angeles	1682
Observations of interstellar zinc		
<i>Period</i>	<i>Obligations</i>	
06/01/79-08/31/81	FY81	TOTAL \$6,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jura, M	GSFC/Boggess, A	11-Astronomy

NSG 7052		University of California - Los Angeles		1683
Shock processes in terrestrial analogs of porous lunar and meteoritic materials				
<i>Period</i>		<i>Obligations</i>		
04/01/74-07/31/80		FY81	TOTAL \$140,955	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Christie, J M	HQ-SL/Quaide, W L		32-Geological Sci	
	HO-SL/French, B M			

<b>NSG 7164</b>	<b>University of California - Los Angeles</b>		<b>1684</b>
<b>Dynamical studies of the Venus atmosphere</b>			
<i>Period</i>	<i>Obligations</i>		
09/01/75-08/31/82	FY81 \$36,000	TOTAL \$192,033	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Schubert, G	HQ-SL/Murphy, R E	31-Atmos Sci	
	HO-SL/Brinton. W E		

NSG 7239		University of California - Los Angeles	1685
Possible correlations between the interplanetary magnetic field and zodiacal light polarization vectors			
<i>Period</i>		<i>Obligations</i>	
06/01/76-06/30/81	FY81	TOTAL	\$15,135
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Allen, L H	HO-SL/Murphy, R E	31-Atmos Sci	

NSG 7295		University of California - Los Angeles		1686
Analysis of data from the helium vector magnetometers on the Pioneers 10 and 11 spacecraft				
Period		Obligations		
10/01/76-09/30/82	FY81	\$123,746	TOTAL	\$499,542
Prin Invest	NASA Tech Officer		CASE Category	
Coleman, P J	HQ-SL/Brinton, H C		31-Atmos Sci	
	HQ-SC/Schmerling, E R			

NSG 7315	University of California - Los Angeles	1687
Theoretical studies of Moon plasma interactions		
<i>Period</i>	<i>Obligations</i>	
02/01/77-01/31/82	FY81	TOTAL \$171,063
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schubert, G	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B E	

NSG 7341	University of California - Los Angeles	1688
Physics of astrophysical plasmas		
<i>Period</i>	<i>Obligations</i>	
04/01/77-11/30/81	FY81	TOTAL \$163,437
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kennel, C F	HQ-SC/Kaluzienski, L J	11-Astronomy

NSG 7407		University of California - Los Angeles	1689
A three-dimensional observational study of the solar five-minute oscillation			
Period		Obligations	
10/01/77-09/30/81	FY81	TOTAL	\$106,000
Prin Invest	NASA Tech Officer	CASE Category	
Ulrich, R K	HO-SC/Chipman, E C	13-Physics	

NSG 7484		University of California - Los Angeles		1690	
Planetary dynamos					
Period		Obligations			
08/01/78-01/31/82		FY81		TOTAL \$55,332	
Prin Invest		NASA Tech Officer		CASE Category	
Busse, F W		HO-SL/Quaide, W L		32-Geological Sci	

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<b>NSG 7489</b>	<b>University of California - Los Angeles</b>	<b>1691</b>	
Paleobiologic studies of Archean evolution			
<i>Period</i>	<i>Obligations</i>		
06/01/79-11/30/81	FY81	TOTAL	\$175,476
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Schopf, J W	HQ-SC/Schmerling, E R		32-Geological Sci
<b>NSG 7583</b>	<b>University of California - Los Angeles</b>	<b>1692</b>	
Thermal behavior of Martian regional and local features			
<i>Period</i>	<i>Obligations</i>		
03/01/79-06/30/81	FY81 \$34,818	TOTAL	\$167,602
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Shubert, G	HQ-SL/Quaide, W L		32-Geological Sci
<b>NSG 7616</b>	<b>University of California - Los Angeles</b>	<b>1693</b>	
Beam-plasma interactions in a large laboratory plasma			
<i>Period</i>	<i>Obligations</i>		
07/01/79-06/30/80	FY81	TOTAL	\$50,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Stenzel, R L	HQ-SC/Schmerling, E R		19-Phys Sci, NEC
<b>NSG 7621</b>	<b>University of California - Los Angeles</b>	<b>1694</b>	
Studies of circumstellar and interstellar grains			
<i>Period</i>	<i>Obligations</i>		
09/01/79-08/31/80	FY81	TOTAL	\$21,339
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Jura, M	HQ-SC/Weiler, E J		11-Astronomy
	HQ-SC/Roman, N G		
<b>NAS 2-10536</b>	<b>University of California - Riverside</b>	<b>1695</b>	
Thermoregulation in primates in the space environment			
<i>Period</i>	<i>Obligations</i>		
01/17/80-12/31/81	FY81 \$99,875	TOTAL	\$131,909
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Fuller, C A	ARC/Ferandin, J		51-Biological Sci
	ARC/Connolly, J		
<b>NGR 05-008-022</b>	<b>University of California - Riverside</b>	<b>1696</b>	
Measurement of neutrons from Sun			
<i>Period</i>	<i>Obligations</i>		
05/16/69-11/30/81	FY81 \$150,000	TOTAL	\$734,669
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
White, R S	HQ-SC/Gilman, D A		11-Astronomy
	HQ-SC/Holt, S S		
<b>NAG 1-77</b>	<b>University of California - San Diego</b>	<b>1697</b>	
Scientific and applications investigations of stratospheric trace gases			
<i>Period</i>	<i>Obligations</i>		
06/04/80-01/15/82	FY81	TOTAL	\$65,174
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Cicerone, R J	LARC/Sullivan, E M		31-Atmos Sci
Crutzen, P J	LARC/Russell, J M		
<b>NAG 3-152</b>	<b>University of California - San Diego</b>	<b>1698</b>	
Potential of surfaces in space			
<i>Period</i>	<i>Obligations</i>		
01/15/81-09/04/81	FY81 \$9,986	TOTAL	\$9,986
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Whipple, E C	LERC/Stevens, N J		39-Env Sci, NEC
	LERC/Purvis, C K		
<b>NAG 5-11</b>	<b>University of California - San Diego</b>	<b>1699</b>	
Research relative to improvements in benchmark stability for precision tilt measurements of crustal dynamics			
<i>Period</i>	<i>Obligations</i>		
02/15/80-02/14/82	FY81 \$64,094	TOTAL	\$104,094
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Berger, J	GSFC/Welker, J		32-Geological Sci
	GSFC/Carpenter, L H		
<b>NAG 5-63</b>	<b>University of California - San Diego</b>	<b>1700</b>	
A study of extragalactic sources			
<i>Period</i>	<i>Obligations</i>		
06/01/80-01/31/82	FY81 \$5,000	TOTAL	\$13,808
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Worrall, D M	GSFC/Bogges, A		11-Astronomy
Peterson, L E			
Bruhweiler, F C			
<b>NAG 5-105</b>	<b>University of California - San Diego</b>	<b>1701</b>	
The nonlinear response in a baroclinic model to stationary forcings			
<i>Period</i>	<i>Obligations</i>		
09/15/80-09/30/82	FY81	TOTAL	\$61,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Roads, J O	GSFC/Shukla, J		31-Atmos Sci
<b>NAG 5-194</b>	<b>University of California - San Diego</b>	<b>1702</b>	
Ultraviolet spectrophotometry of quasi-stellar objects and Seyfert galaxies			
<i>Period</i>	<i>Obligations</i>		
07/01/81-12/31/81	FY81 \$5,500	TOTAL	\$5,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Smith, H E	GSFC/Bogges, A		11-Astronomy
<b>NAG 5-195</b>	<b>University of California - San Diego</b>	<b>1703</b>	
Ultraviolet spectrophotometry of selected quasars and galaxies			
<i>Period</i>	<i>Obligations</i>		
07/01/81-12/31/81	FY81 \$5,000	TOTAL	\$5,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Puetter, R C	GSFC/Bogges, A		11-Astronomy
<b>NAG 6-14</b>	<b>University of California - San Diego</b>	<b>1704</b>	
Photoecology, optical properties and remote sensing of warm core rings			
<i>Period</i>	<i>Obligations</i>		
04/01/81-09/30/81	FY81 \$42,500	TOTAL	\$42,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Smith, R C	WFC/Hoge, F E		33-Oceanography

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**NAG 8-315** University of California - San Diego 1705  
X-ray observations of radio bursting quasars NRA0140 and  
NRA0530 on the High Energy Astronomical Observatory-B guest  
investigator program

Period	FY81	Obligations	TOTAL
02/01/80-01/31/82			\$9,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Marscher, A P	MSFC/Jones, J B	11-Astronomy	

**NAG 8-340** University of California - San Diego 1706  
X-ray observations of optical absorption-line quasi stellar objects  
on the High Energy Astronomical Observatory-B guest investigator  
program

Period	FY81	Obligations	TOTAL
03/01/80-02/28/82			\$6,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Burbidge, E M	MSFC/Jones, J B	11-Astronomy	

**NAG 8-377** University of California - San Diego 1707  
IPC observations of 31 selected quasars for determination of  
their average 0.15-5000 keV spectrum 1

Period	FY81	Obligations	TOTAL
09/22/80-06/30/82			\$6,542
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Worrall, D M	MSFC/Stone, J F	11-Astronomy	

**NAGW 12** University of California - San Diego 1708  
Theoretical work in high energy astrophysics and extragalactic  
astronomy

Period	FY81	Obligations	TOTAL
11/01/79-10/31/81			\$33,347
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Felten, J E	HQ-SC/Kaluzeinski, L J	11-Astronomy	

**NAGW 20** University of California - San Diego 1709  
Mechanism of synthesis of amino, hydroly and dicarboxylic acids  
in carbonaceous chondrites

Period	FY81	Obligations	TOTAL
12/01/79-11/30/81	\$44,321		\$84,321
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Miller, S L	HQ-SB/Devincenzi, D L	32-Geological Sci	

**NAGW 30** University of California - San Diego 1710  
Radioactive transfer effects in quasi-stellar object emission line  
clouds

Period	FY81	Obligations	TOTAL
02/01/80-01/31/82	\$29,957		\$54,859
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Canfield, R C	HQ-SC/Weiler, E J	11-Astronomy	
Puetter, R C	HQ-SC/Bogges, N W		

**NAGW 45** University of California - San Diego 1711  
Measurements of key biogeochemical gases and theoretical studies  
in atmospheric chemistry

Period	FY81	Obligations	TOTAL
02/01/80-04/30/81			\$85,950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Cicerow, R J	HQ-EB/Watson, R T	31-Atmos Sci	

**NAGW 73** University of California - San Diego 1712  
Planetary biology and microbial ecology

Period	FY81	Obligations	TOTAL
04/05/80-07/01/82	\$1,769		\$67,724
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Nealson, K H	HQ-SB/Devincenzi, D L	51-Biological Sci	
Cowans, J			

**NAGW 103** University of California - San Diego 1713  
The abundance of the elements

Period	FY81	Obligations	TOTAL
11/01/80-10/31/81	\$18,458		\$18,458
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Suess, H	HQ-SL/Quade, W L	32-Geological Sci	
	HQ-SL/French, B M		

**NAGW 181** University of California - San Diego 1714  
Research expedition to study prochloran in Palau

Period	FY81	Obligations	TOTAL
03/15/81-03/14/82	\$32,608		\$32,608
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Lewin, R A	HQ-SB/Devincenzi, D L	51-Biological Sci	

**NAGW 210** University of California - San Diego 1715  
Condensation process in the early solar system

Period	FY81	Obligations	TOTAL
05/15/81-05/14/82	\$34,139		\$34,139
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Arnold, J R	HQ-SL/Quade, W L	32-Geological Sci	
	HQ-SL/French, B M		

**NAGW 225** University of California - San Diego 1716  
Impact ionization study

Period	FY81	Obligations	TOTAL
08/01/81-12/31/81	\$9,632		\$9,632
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Whipple, E C	HQ-SL/Murphy, R E	31-Atmos Sci	
	HQ-SL/Brunk, W E		

**NAS 2-6552** University of California - San Diego 1717  
Data analysis of Jovian trapped radiation by Pioneer F/G

Period	FY81	Obligations	TOTAL
01/25/72-09/30/81	\$103,229		\$1,194,027
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Fillius, R W	ARC/Fimmel, R O	11-Astronomy	
	ARC/Dyer, J W		



**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

<b>NAS 5-24463      University of California - San Diego      1718</b>			
Faint object spectrograph for space telescope			
<i>Period</i>	<i>Obligations</i>		
09/15/78-10/31/84	FY81 \$5,804,999	TOTAL \$20,632,485	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Harms, R J	GSFC/White, R A	11-Astronomy	
	GSFC/Mundy, E		
<b>NAS 5-25054      University of California - San Diego      1719</b>			
Development of digital image tubes			
<i>Period</i>	<i>Obligations</i>		
05/01/78-11/30/81	FY81 \$42,059	TOTAL \$481,829	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Beaver, E A	GSFC/Shannon, J L	11-Astronomy	
<b>NAS 5-25448      University of California - San Diego      1720</b>			
Gamma-ray spectroscopy experiment for the gamma-ray ob- servatory final definition phase			
<i>Period</i>	<i>Obligations</i>		
01/16/79-05/31/81	FY81 \$590,607	TOTAL \$976,569	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Patterson, L E	GSFC/Davis, M A	11-Astronomy	
<b>NAS 5-26249      University of California - San Diego      1721</b>			
Coastal zone scanner validation studies			
<i>Period</i>	<i>Obligations</i>		
07/23/80-09/30/81	FY81 \$45,000	TOTAL \$85,000	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Austin, R W	GSFC/Oakes, A	33-Oceanography	
<b>NAS 5-26668      University of California - San Diego      1722</b>			
The calculation of the rate of neutron production in solar flares by accelerated particles			
<i>Period</i>	<i>Obligations</i>		
09/01/81-10/01/82	FY81 \$20,208	TOTAL \$20,208	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Lingenfelter, R E	GSFC/Ramaty, R	13-Physics	
<b>NAS 8-27974      University of California - San Diego      1723</b>			
Design and development of AGR-4 MeV range gamma ray telescope experiment under the HEAO program			
<i>Period</i>	<i>Obligations</i>		
06/22/72-09/30/82	FY81 \$558,322	TOTAL \$8,549,441	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Peterson, L E	MSFC/Stone, J F	11-Astronomy	
	MSFC/Lusk, J L		
<b>NAS 8-32984      University of California - San Diego      1724</b>			
Analysis of soft X-ray data			
<i>Period</i>	<i>Obligations</i>		
02/01/79-10/31/81	FY81	TOTAL \$41,184	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Svestka, Z	MSFC/DeLoach, A C	13-Physics	
	MSFC/Snoddy, W C		
<b>NAS 8-33795      University of California - San Diego      1725</b>			
Solar terrestrial observatory science study group			
<i>Period</i>	<i>Obligations</i>		
06/23/80-12/31/81	FY81	TOTAL \$35,000	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Canfield, R C	MSFC/Chappell, C R	31-Atmos Sci	
	MSFC/Fields, S A		
<b>NAS 9-16033      University of California - San Diego      1726</b>			
Effect of weightlessness on the fluid physiology of the inner ear			
<i>Period</i>	<i>Obligations</i>		
01/17/80-01/31/82	FY81	TOTAL \$16,448	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Ryan, A F	JSC/Lintott, J	59-Life Sci, NEC	
<b>NAS 9-16037      University of California - San Diego      1727</b>			
Pulmonary functions during weightlessness			
<i>Period</i>	<i>Obligations</i>		
01/17/80-12/31/81	FY81	TOTAL \$55,801	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
West, J B	JSC/French, B	59-Life Sci, NEC	
<b>NAS 9-16039      University of California - San Diego      1728</b>			
Tissue shifts and muscle function in hormone during weightless- ness			
<i>Period</i>	<i>Obligations</i>		
01/17/80-01/31/82	FY81 \$8,750	TOTAL \$29,926	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Morgens, A R	JSC/White, T	59-Life Sci, NEC	
<b>NAS 9-16312      University of California - San Diego      1729</b>			
Micro assay for catecholamine concentration in body fluids			
<i>Period</i>	<i>Obligations</i>		
02/01/81-02/01/82	FY81 \$11,300	TOTAL \$11,300	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Ziegler, M G	JSC/Leach, C S	59-Life Sci, NEC	
<b>NCA 2-658001      University of California - San Diego      1730</b>			
High deformation-rate extensional rheology of polymeric anti-misting additives			
<i>Period</i>	<i>Obligations</i>		
02/01/80-09/30/81	FY81	TOTAL \$10,000	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Middleman, S	ARC/Altman, R L	46-Mech Engr	
<b>NGL 05-005-003      University of California - San Diego      1731</b>			
Laboratory and balloon experiments in X-ray and gamma ray astronomy			
<i>Period</i>	<i>Obligations</i>		
09/15/62-11/30/81	FY81 \$339,934	TOTAL \$2,900,686	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Peterson, L E	HQ-SC/Kaluzienski, L J	13-Physics	
Pelling, R M	HQ-SC/Opp, A G		

# NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NGL 05-005-004 University of California - San Diego 1732  
Theoretical studies in astrophysics

Period	Obligations
02/04/63-03/31/82	FY81: \$45,604 TOTAL \$886,447
Pnn Invest	NASA Tech Officer CASE Category
Gould, R J	HQ-SC/Kaluznienski, L J 11-Astronomy
	HQ-SC/Holt, S S

NGL 05-005-007 University of California - San Diego 1733  
Study of geomagnetically trapped particles by Explorer and Injun satellite data, refining particle detectors, detector systems and telemetered-data processing equipment

Period	Obligations
02/20/64-09/30/81	FY81: \$220,000 TOTAL \$2,791,364
Pnn Invest	NASA Tech Officer CASE Category
McIlwain, C E	HQ-SC/Mayr, H G 13-Physics
	HQ-SC/Schmerling, E R

NGL 05-009-002 University of California - San Diego 1734  
Studies of the composition and structure of meteorites

Period	Obligations
10/02/63-02/28/82	FY81: \$34,614 TOTAL \$841,301
Pnn Invest	NASA Tech Officer CASE Category
Arrhenius, G	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/French, B M

NGL 05-009-005 University of California - San Diego 1735  
Research on general geochemical problems, including meteorite materials, rare gas content of meteorites and separation in gas phase at time of formation of solar system

Period	Obligations
10/31/62-05/31/81	FY81: TOTAL \$536,253
Pnn Invest	NASA Tech Officer CASE Category
Suess, H E	HQ-SL/Quaide, W L 19-Phys Sci, NEC

NGL 05-009-148 University of California - San Diego 1736  
Lunar sample analysis

Period	Obligations
02/11/71-01/31/82	FY81 \$117,860 TOTAL \$1,152,984
Pnn Invest	NASA Tech Officer CASE Category
Arnold, J R	JSC/Warner, J L 12-Chemistry

NGL 05-009-150 University of California - San Diego 1737  
Lunar sample analysis

Period	Obligations
02/01/71-01/31/82	FY81: \$252,000 TOTAL \$1,867,622
Pnn Invest	NASA Tech Officer CASE Category
Marti, K	JSC/Warner, J L 12-Chemistry

NGR 05-005-005 University of California - San Diego 1738  
Study of lunar gamma ray emission

Period	Obligations
09/10/63-07/31/82	FY81 \$80,000 TOTAL \$940,836
Pnn Invest	NASA Tech Officer CASE Category
Arnold, J. R	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/French, B M

NGR 05-005-055 University of California - San Diego 1739  
Infrared astronomic observation from high altitude airplane/telescope program

Period	Obligations
06/05/73-10/31/81	FY81 \$72,895 TOTAL \$498,909
Pnn Invest	NASA Tech Officer CASE Category
Jones, B	ARC/Haughney, L C 11-Astronomy
	ARC/Gillespie, C M, Jr

NGR 05-009-110 University of California - San Diego 1740  
The structure and evolution of the asteroid belt

Period	Obligations
01/23/70-11/30/81	FY81 TOTAL \$603,690
Pnn Invest	NASA Tech Officer CASE Category
Alfven, H	HQ-SL/Murphy, R E 11-Astronomy
Mendis, D A	HQ-SL/Brunk, W E

NGR 05-009-188 University of California - San Diego 1741  
Construction of a 200 channel photometer for use in low light level astronomy

Period	Obligations
05/17/72-06/30/82	FY81 \$29,815 TOTAL \$618,743
Pnn Invest	NASA Tech Officer CASE Category
McIlwain, C E	HQ-SC/Weiler, E J 11-Astronomy

NGR 05-009-246 University of California - San Diego 1742  
Geophysical perturbations on satellite geodesy

Period	Obligations
11/01/73-06/30/81	FY81 TOTAL \$1,077,854
Pnn Invest	NASA Tech Officer CASE Category
Berger, J	GSFC/Smith, D E 39-Env Sci, NEC
Brune, J N	

NSG 1641 University of California - San Diego 1743  
Ship and satellite bio-optical research in the California bight

Period	Obligations
08/01/79-01/31/82	FY81 \$143,294 TOTAL \$301,932
Pnn Invest	NASA Tech Officer CASE Category
Smith, R C	LARC/Esaias, W E 33-Oceanography

NSG 3219 University of California - San Diego 1744  
Research on variable density turbulence

Period	Obligations
10/01/78-09/29/81	FY81 TOTAL \$131,154
Pnn Invest	NASA Tech Officer CASE Category
Libby, P A	LERC/Marek, C J 41-Aero Engr
Larue, J C	

NSG 3296 University of California - San Diego 1745  
Studies related to proplet burning at zero G

Period	Obligations
10/01/79-03/30/81	FY81 TOTAL \$30,000
Pnn Invest	NASA Tech Officer CASE Category
Williams, F A	LERC/Covhran, T H 13-Physics

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NSG 5321**                      **University of California - San Diego**                      **1746**  
 Coronal non-thermal processes

<i>Period</i>	<i>Obligations</i>
01/15/79-09/30/81	FY81 \$2,000      TOTAL \$48,019
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hudson, H S	GSFC/Wende, C      31-Atmos Sci

**NSG 5322**                      **University of California - San Diego**                      **1747**  
 Solar analysis of the solar-constant monitoring package

<i>Period</i>	<i>Obligations</i>
01/15/79-03/31/82	FY81 \$29,919      TOTAL \$94,811
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hudson, H S	GSFC/Wende, C      31-Atmos Sci

**NSG 5331**                      **University of California - San Diego**                      **1748**  
 Measurement of vertical crustal motion with superconducting gravimeters

<i>Period</i>	<i>Obligations</i>
02/01/79-01/31/82	FY81 \$45,000      TOTAL \$223,138
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Goodkind, J M	GSFC/Welker, J      19-Phys Sci, NEC
Warburton, R J	GSFC/Kahn, W D

**NSG 7027**                      **University of California - San Diego**                      **1749**  
 Orbital geochemical data analysis and synthesis

<i>Period</i>	<i>Obligations</i>
03/01/74-01/31/82	FY81 \$31,000      TOTAL \$449,568
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Arnold, J R	HQ-SL/Quaide, W L      32-Geological Sci
	HQ-SL/French, B M

**NSG 7102**                      **University of California - San Diego**                      **1750**  
 Research on processes controlling the formation and evolution of the small bodies in the solar system

<i>Period</i>	<i>Obligations</i>
09/01/74-10/31/81	FY81 \$53,806      TOTAL \$337,214
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Alfven, H	HQ-SL/Quaide, W L      32-Geological Sci
	HQ-SL/French, B M

**NSG 7121**                      **University of California - San Diego**                      **1751**  
 Carbonaceous chondrites early irradiation and 244/PU fission records

<i>Period</i>	<i>Obligations</i>
02/27/75-01/31/82	FY81 \$65,704      TOTAL \$333,921
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
MacDougall, J D	HQ-SL/French, B M      32-Geological Sci
	HQ-SL/Quaide, W L

**NSG 7161**                      **University of California - San Diego**                      **1752**  
 Analysis and interpretation of solar X-ray data from OSO-7

<i>Period</i>	<i>Obligations</i>
07/01/75-09/30/81	FY81 \$78,000      TOTAL \$356,453
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Peterson, L E	HQ-SC/Chipman, E      13-Physics

**NSG 7294**                      **University of California - San Diego**                      **1753**  
 Preparation of a set of sky maps in hard X-rays from OSO-1 data

<i>Period</i>	<i>Obligations</i>
10/01/76-02/28/82	FY81      TOTAL \$84,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Rothschild, R E	HQ-SC/Kaluzienski, L J      11-Astronomy

**NSG 7377**                      **University of California - San Diego**                      **1754**  
 Ultraviolet spectra of quasars related extra galactic sources, and X-ray sources

<i>Period</i>	<i>Obligations</i>
09/15/77-09/14/82	FY81 \$75,138      TOTAL \$159,760
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Burbidge, E M	HQ-SC/Weiler, E J      11-Astronomy
	HQ-SC/Boggess, N

**NSG 7406**                      **University of California - San Diego**                      **1755**  
 Hydrodynamic models of flares

<i>Period</i>	<i>Obligations</i>
03/01/78-01/31/82	FY81 \$90,885      TOTAL \$277,756
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Canfield, R C	HQ-SC/Chipman, E      13-Physics

**NSG 7541**                      **University of California - San Diego**                      **1756**  
 Theoretical studies in gamma ray line astronomy

<i>Period</i>	<i>Obligations</i>
02/01/80-03/31/82	FY81 \$41,996      TOTAL \$115,496
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lingenfelter, R E	HQ-SC/Kaluzienski, L J      11-Astronomy

**NSG 7623**                      **University of California - San Diego**                      **1757**  
 The new plasmas and its applications to planetary magnetospheres and the heliosphere

<i>Period</i>	<i>Obligations</i>
07/01/79-12/31/81	FY81 \$60,000      TOTAL \$120,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Alfven, H	HQ-SC/Mayr, H G      19-Phys Sci, NEC
	HQ-SC/Schmerling, E R

**NSG 9048**                      **University of California - San Diego**                      **1758**  
 Mechanism of compensation for vestibular lesions and integrative functions in control of equilibrium

<i>Period</i>	<i>Obligations</i>
01/01/77-04/30/81	FY81      TOTAL \$182,250
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Bullock, T H	JSC/Homick, J L      56-Medical Sciences

**NAGW 236**                      **University of California - San Francisco**                      **1759**  
 Alterations in gut transport of minerals and in binding protein during simulated weightlessness

<i>Period</i>	<i>Obligations</i>
08/01/81-07/31/82	FY81 \$60,000      TOTAL \$60,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Bikle, D D	HQ-SB/Halstead, T W      51-Biological Sci

# NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

**NAS 2-10816**      **University of California - San Francisco**      **1760**  
Supporting study for electron microscopy, electromyography and  
protease activity of rat hind muscles

Period	Obligations	
09/01/80-07/15/81	FY81 \$9,678	TOTAL \$9,678
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Riley, D	ARC/Ferandin, J	59-Life Sci, NEC
	ARC/Martens, J	

**NAS 2-10927**      **University of California - San Francisco**      **1761**  
Calcium metabolism and correlated endocrine measurements in  
primates during Cosmos '82

Period	Obligations	
03/01/81-07/31/83	FY81 \$55,412	TOTAL \$55,412
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cann, C	ARC/Souza, K	59-Life Sci, NEC
	ARC/Holton, E	

**NAS 9-15887**      **University of California - San Francisco**      **1762**  
Computerized tomographic determination of spinal bone mineral  
content

Period	Obligations	
09/15/79-12/31/81	FY81 \$67,000	TOTAL \$120,400
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Genant, H K	JSC/Altchuler, S I	56-Medical Sciences

**NAS 9-16027**      **University of California - San Francisco**      **1763**  
Determination of human 1, 25 dihydroxy vitamin D3 (1, 25 OH  
D3), calcitonin (CT) and parathormone (PHT) levels during the  
development of disuse osteoporosis

Period	Obligations	
01/01/80-12/31/81	FY81	TOTAL \$24,527
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnaud, C	JSC/Altchuler, S I	56-Medical Sciences

**NAS 9-16038**      **University of California - San Francisco**      **1764**  
Life science flight experiment insulin and glucose metabolism in  
man

Period	Obligations	
01/17/80-01/31/82	FY81	TOTAL \$13,673
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Searle, D L	JSC/White, T T	59-Life Sci, NEC

**NAS 9-16227**      **University of California - San Francisco**      **1765**  
Pathophysiology of mineral loss during increased urinary and  
fecal calcium excretion

Period	Obligations	
03/01/80-01/31/82	FY81 \$37,697	TOTAL \$37,697
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnaud, C D	JSC/Lintott, J	59-Life Sci, NEC

**NCA 2-665002**      **University of California - San Francisco**      **1766**  
Exploratory studies of the relationship of gastric activity and  
other physiological measures to motion sickness

Period	Obligations	
10/01/79-09/30/81	FY81	TOTAL \$49,446
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kamiya, J	ARC/Cowings, P S	56-Medical Sciences

**NCA 2-665003**      **University of California - San Francisco**      **1767**  
Studies on the localization and interconnections of emetic trigger  
zones in the central nervous system

Period	Obligations	
01/01/80-12/31/81	FY81 \$25,134	TOTAL \$48,750
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Snyder, R L	ARC/Mehler, W R	51-Biological Sci

**NCA 2-665004**      **University of California - San Francisco**      **1768**  
Evaluation of osteocalcin as the homeostatic control mechanism  
for mineralization in bone

Period	Obligations	
01/01/80-12/31/81	FY81 \$21,800	TOTAL \$49,626
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cann, C E	ARC/Callahan, P X	51-Biological Sci

**NCA 2-665005**      **University of California - San Francisco**      **1769**  
Effects of adrenergic agents on vasopressin secretion

Period	Obligations	
04/01/80-06/30/81	FY81	TOTAL \$5,400
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reid, I A	ARC/Keil, L C	51-Biological Sci

**NCA 2-665006**      **University of California - San Francisco**      **1770**  
Interactions between osmolality and blood volume in the control  
of vasopressin secretion

Period	Obligations	
06/01/80-05/31/82	FY81 \$15,000	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ramsay, D J	ARC/Keil, L C	51-Biological Sci

**NCA 2-665007**      **University of California - San Francisco**      **1771**  
Exploratory studies of the cardiovascular parameters of motion  
sickness

Period	Obligations	
07/01/80-06/30/81	FY81	TOTAL \$18,787
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Naifeh, K	ARC/Cowings, P S	69-Psych, NEC

**NCA 2-665008**      **University of California - San Francisco**      **1772**  
Calcium kinetics during hypokinesia

Period	Obligations	
07/15/80-07/14/82	FY81	TOTAL \$25,736
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cann, C E	ARC/Holten, E M	51-Biological Sci

**NCA 2-665101**      **University of California - San Francisco**      **1773**  
Role of intermolecular interactions in the self organization of  
polyinpeptide models of collagen

Period	Obligations	
11/15/80-11/14/81	FY81 \$19,913	TOTAL \$19,913
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bhatnagar, R	ARC/MacElroy, R D	51-Biological Sci

# **NASA'S UNIVERSITY PROGRAM** **CALIFORNIA (Continued)**

**NCA 2-665102**      **University of California - San Francisco**      **1774**  
Comparison of the effects of insulin-like growth factor, neurotrophic factor, and somatotropin on muscle growth

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/83	FY81 \$29,509	TOTAL \$29,509
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rosen, S D	ARC/Ellis, S	51-Biological Sci

**NCA 2-665103**      **University of California - San Francisco**      **1775**  
Role of central catecholaminergic neurons in the control of vasopressin secretion

<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$6,000	TOTAL \$6,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reid, I A	ARC/Keil, L C	51-Biological Sci

**NCA 2-665902**      **University of California - San Francisco**      **1776**  
Bone turnover and endocrine status in rats on a model system that simulates weightlessness

<i>Period</i>	<i>Obligations</i>	
04/15/79-06/30/81	FY81	TOTAL \$40,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnaud, C D	ARC/Holton, E M	51-Biological Sci

**NCA 2-665903**      **University of California - San Francisco**      **1777**  
Localization of tripeptidyl aminopeptidase and carbonic anhydrase III in rat muscles by light and electron microscopy

<i>Period</i>	<i>Obligations</i>	
06/01/79-12/31/81	FY81 \$7,977	TOTAL \$48,285
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Riley, D A	ARC/Ellis, S	51-Biological Sci

**NCA 2-665905**      **University of California - San Francisco**      **1778**  
Quantitative determination of diastolic left ventricular properties and dynamic geometry in the dog

<i>Period</i>	<i>Obligations</i>	
07/01/79-06/30/82	FY81 \$8,505	TOTAL \$20,968
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Glantz, S A	ARC/Sandler, H	56-Medical Sciences

**NCA 2-665906**      **University of California - San Francisco**      **1779**  
Ultrastructural studies of ionic transfer through bone cell sheets in isolated perfusion culture

<i>Period</i>	<i>Obligations</i>	
07/01/79-09/30/81	FY81 \$19,029	TOTAL \$40,882
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnaud, C D	ARC/Philpott, D E	56-Medical Sciences

**NCC 2-115**      **University of California - San Francisco**      **1780**  
A preventive method for the zero-gravity sickness syndrome

<i>Period</i>	<i>Obligations</i>	
01/01/81-10/31/81	FY81 \$65,000	TOTAL \$65,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kamiya, J	ARC/Cowings, P S	61-Biol Aspects

**NGT 05-029-800**      **University of California - San Francisco**      **1781**  
Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$10,000	TOTAL \$20,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kuntz, I	HQ-LC/Carter, C H	51-Biological Sci

**NSG 7151**      **University of California - San Francisco**      **1782**  
Light energy conversion in halobacterium

<i>Period</i>	<i>Obligations</i>	
07/01/75-10/31/81	FY81 \$50,000	TOTAL \$319,605
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stoeckenius, W	HQ-SB/Devincenzi, D L	51-Biological Sci
Bogomolni, R A		
Lozier, R H		

**NAG 2-27**      **University of California - Santa Barbara**      **1783**  
Analytical and experimental investigation of liquid double drop dynamics Preliminary design for Space Shuttle experiments

<i>Period</i>	<i>Obligations</i>	
04/01/80-12/31/81	FY81	TOTAL \$23,943
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Vanyo, J	ARC/Brooks, W F	13-Physics
	ARC/Lum, H	

**NAG 2-48**      **University of California - Santa Barbara**      **1784**  
Thermodynamics of free electron lasers

<i>Period</i>	<i>Obligations</i>	
05/01/80-01/31/82	FY81 \$27,382	TOTAL \$48,882
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Colson, W B	ARC/McKenzie, R L	13-Physics

**NAG 2-73**      **University of California - Santa Barbara**      **1785**  
Exploration of evolutionary histories leading to complex life

<i>Period</i>	<i>Obligations</i>	
10/01/80-09/30/81	FY81 \$12,762	TOTAL \$12,762
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Valentine, J W	ARC/Billingham, J	51-Biological Sci

**NAG 2-121**      **University of California - Santa Barbara**      **1786**  
Agricultural land use change detection, California

<i>Period</i>	<i>Obligations</i>	
07/01/81-10/31/81	FY81 \$28,000	TOTAL \$28,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Estes, J E	ARC/Sinnott, D B	99-Multi-Discip
	ARC/Norman, S M	

**NAG 5-177**      **University of California - Santa Barbara**      **1787**  
Neotectonics of the San Andres Fault system-basin and range province juncture

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$31,000	TOTAL \$31,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Estes, J E	GSFC/Lowman, P D	32-Geological Sci
Crowell, J C		

**NASA'S UNIVERSITY PROGRAM  
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**NAGW 231**      **University of California - Santa Barbara**      **1788**  
Issues in global ecology

Period	Obligations
07/01/81-12/31/81	FY81 \$99,532      TOTAL \$99,532
Prin Invest	NASA Tech Officer      CASE Category
Botkin, D B	HQ-SB/Bredt, J H      54-Env Biology
	HQ-SB/Devincenzi, D L.

**NAS 9-15509**      **University of California - Santa Barbara**      **1789**  
Forest classification and inventory system using LANDSAT, digital terrain, and ground sample data

Period	Obligations
04/01/78-09/30/81	FY81 \$39,940      TOTAL \$148,867
Prin Invest	NASA Tech Officer      CASE Category
Strahler, A H	JSC/Amsbury, D L      32-Geological Sci

**NAS 9-16077**      **University of California - Santa Barbara**      **1790**  
Develop a plan to define a program of basic research in utilization and evaluation of information derived from remotely sensed data

Period	Obligations
02/01/80-07/31/81	FY81      TOTAL \$83,628
Prin Invest	NASA Tech Officer      CASE Category
Estes, J E	JSC/MacDonald, R B. 32-Geological Sci

**NASW 3392**      **University of California - Santa Barbara**      **1791**  
Conference on fundamental issues in global ecology

Period	Obligations
03/01/80-07/31/81	FY81 \$42,438      TOTAL \$102,810
Prin Invest	NASA Tech Officer      CASE Category
Botkin, D B	HQ-SB/Bredt, J H      54-Env Biology

**NCA 2-680101**      **University of California - Santa Barbara**      **1792**  
Ecological interactions among organisms in physically isolated environments Identification of possible exogenous control parameters

Period	Obligations
06/01/81-05/31/83	FY81 \$26,546      TOTAL \$26,546
Prin Invest	NASA Tech Officer      CASE Category
Botkin, D	ARC/MacElroy, R D      54-Env Biology

**NCC 2-63**      **University of California - Santa Barbara**      **1793**  
An investigation of the effect of surface impurities on the absorption kinetics of hydrogen chemisorbed iron

Period	Obligations
04/01/80-03/31/82	FY81 \$57,630      TOTAL \$106,298
Prin Invest	NASA Tech Officer      CASE Category
Shanabarger, M R	ARC/Nelson, H G      47-Materials Engr

**NCC 2-124**      **University of California - Santa Barbara**      **1794**  
LANDSAT inventory of irrigated lands and small grains

Period	Obligations
02/01/81-01/31/82	FY81 \$30,000      TOTAL \$30,000
Prin Invest	NASA Tech Officer      CASE Category
Estes, J E	ARC/Bauer, E H      19-Phys Sci, NEC
Baggett, J D	

**NCC 2-157**      **University of California - Santa Barbara**      **1795**  
Modeling techniques for forest management applications

Period	Obligations
09/15/81-06/14/82	FY81 \$25,390      TOTAL \$25,390
Prin Invest	NASA Tech Officer      CASE Category
Strahler, A H	ARC/Peterson, D L      39-Env Sci, NEC
	ARC/Brass, J A

**NCC 5-5**      **University of California - Santa Barbara**      **1796**  
Soil moisture detection using Seasat data and radar scatterometers

Period	Obligations
04/01/79-03/31/82	FY81 \$41,000      TOTAL \$101,003
Prin Invest	NASA Tech Officer      CASE Category
Estes, J E	GSFC/Chang, A      32-Geological Sci
Simonett, D S	

**NGR 05-010-062**      **University of California - Santa Barbara**      **1797**  
Planetary geophysics

Period	Obligations
03/01/73-01/31/82	FY81 \$33,718      TOTAL \$190,485
Prin Invest	NASA Tech Officer      CASE Category
Peale, S J	HQ-SL/Quaide, W L      32-Geological Sci
	HQ-SL/French, B

**NGT 05-010-800**      **University of California - Santa Barbara**      **1798**  
Graduate student researchers program

Period	Obligations
09/01/80-08/31/82	FY81 \$12,000      TOTAL \$20,700
Prin Invest	NASA Tech Officer      CASE Category
Strahler, A	HQ-LC/Carter, C H      39-Env Sci, NEC

**NGT 05-010-801**      **University of California - Santa Barbara**      **1799**  
Graduate student researchers program

Period	Obligations
09/15/81-09/14/82	FY81 \$11,750      TOTAL \$11,750
Prin Invest	NASA Tech Officer      CASE Category
Dozier, J	HQ-LC/Carter, C H      22-Computer Science

**NSG 3256**      **University of California - Santa Barbara**      **1800**  
Laser fluorescence studies of the chemical interactions of sodium species with sulfur bearing fuels

Period	Obligations
03/01/79-12/31/81	FY81      TOTAL \$75,266
Prin Invest	NASA Tech Officer      CASE Category
Steinberg, M	LERC/Kohl, F J      12-Chemistry
Schofield, K	LERC/Stearns, C A

**NSG 5262**      **University of California - Santa Barbara**      **1801**  
Calibration of satellite data for input to distributed parameter hydrologic models

Period	Obligations
04/01/78-10/31/81	FY81      TOTAL \$180,232
Prin Invest	NASA Tech Officer      CASE Category
Dozier, J	GSFC/Rango, A      39-Env Sci, NEC

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**NSG 7586 University of California - Santa Barbara 1802**  
Magnetization of lunar samples

<i>Period</i>	<i>Obligations</i>	
05/01/79-01/31/82	FY81 \$32,409	TOTAL \$90,996
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fuller, M D	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NSG 9020 University of California - Santa Barbara 1803**  
Remnant magnetization of lunar samples

<i>Period</i>	<i>Obligations</i>	
10/31/74-01/31/82	FY81 \$10,000	TOTAL \$411,356
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fuller, M D	JSC/Warner, J L	19-Phys Sci, NEC

**NAG 5-175 University of California - Santa Cruz 1804**  
Luminosity calibration of low red shift quasars

<i>Period</i>	<i>Obligations</i>	
04/15/81-04/14/82	FY81 \$7,041	TOTAL \$7,041
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wampler, E J	GSFC/Boggess, A	11-Astronomy

**NAG 8-352 University of California - Santa Cruz 1805**  
The relations between optical and X-ray emission from quasars and BL Lacertae objects

<i>Period</i>	<i>Obligations</i>	
06/27/80-06/27/82	FY81	TOTAL \$6,963
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miller, J S	MSFC/Swearingen, J C	11-Astronomy
Blumenthal, G		

**NAG 8-407 University of California - Santa Cruz 1806**  
The relation between magnetic fields and coronae in late-type stars

<i>Period</i>	<i>Obligations</i>	
06/15/81-06/07/82	FY81 \$8,750	TOTAL \$8,750
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Vogt, S S	MSFC/Stone, J F	11-Astronomy

**NAGW 195 University of California - Santa Cruz 1807**  
Summer workshop in astronomy and astrophysics

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$6,782	TOTAL \$6,782
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Faulkner, J	HQ-SC/Kaluzienski, L J	11-Astronomy
Kraft, R P	HQ-SC/Holt, S S	
Lin, D W		

**NCA 2-690001 University of California - Santa Cruz 1808**  
Comparison of calculated and observed properties of collapsing protostellar gas clouds

<i>Period</i>	<i>Obligations</i>	
10/01/79-08/31/81	FY81	TOTAL \$49,079
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bodenheimer, P	ARC/Black, D C	11-Astronomy
Villere, K R		

**NCA 2-690101 University of California - Santa Cruz 1809**  
Study of the chemical composition and homogeneity of the galaxy and study of the operational problems of shuttle infrared telescope (SIRTF) telescope

<i>Period</i>	<i>Obligations</i>	
09/16/81-06/15/82	FY81 \$29,455	TOTAL \$29,455
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rank, D M	ARC/Witteborn, F C	11-Astronomy
	ARC/Werner, M W	

**NCA 2-690102 University of California - Santa Cruz 1810**  
Radiative transfer in molecular clouds

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$15,000	TOTAL \$15,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bodenheimer, P	ARC/Black, D C	11-Astronomy
Villere, K R		

**NGR 05-061-015 University of California - Santa Cruz 1811**  
Infrared instrumentation

<i>Period</i>	<i>Obligations</i>	
07/06/72-12/31/81	FY81	TOTAL \$193,385
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rank, D M	HQ-SC/Boggess, N W	11-Astronomy

**NSG 5361 University of California - Santa Cruz 1812**  
Ultraviolet spectroscopy of Tauri stars

<i>Period</i>	<i>Obligations</i>	
06/01/79-05/31/82	FY81 \$5,000	TOTAL \$10,400
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Herbig, G H	GSFC/Boggess, A	11-Astronomy

**NSG 7503 University of California - Santa Cruz 1813**  
Astronomical applications of charged coupled device technology

<i>Period</i>	<i>Obligations</i>	
11/01/78-10/31/82	FY81 \$24,999	TOTAL \$63,558
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miller, J S	HQ-SC/Boggess, N W	11-Astronomy
Rank, D M	HQ-SC/Roman, N G	

**NCA 2-588001 University of The Pacific 1814**  
Laser holographic interferometry for aerodynamics

<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/81	FY81 \$15,520	TOTAL \$30,817
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Perry, R L	ARC/Lee, G	13-Physics

**NCA 2-588002 University of The Pacific 1815**  
Proliferation and differentiation of periodontal ligament cells and bone cells during simulated weightlessness

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81 \$17,600	TOTAL \$28,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Roberts, W E	ARC/Holton, E M	59-Life Sci, NEC

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**NAS 2-10161**                      **University of San Francisco**                      **1816**  
 US/USSR radiation protection studies  
*Period*                                      *Obligations*  
 02/01/79-09/30/81                      FY81                      TOTAL \$76,789  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      ARC/Souza, K A                      59-Life Sci, NEC

**NAS 8-26758**                      **University of San Francisco**                      **1817**  
 Study for heavy particle, passive, personnel dosimetry using etched particles  
*Period*                                      *Obligations*  
 01/21/71-09/30/81                      FY81                      TOTAL \$142,704  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      MSFC/Parnell, T A                      13-Physics  
    MSFC/Watts, J W, Jr

**NAS 8-34340**                      **University of San Francisco**                      **1818**  
 Heavy particle, passive, personnel dosimetry using etched particles  
*Period*                                      *Obligations*  
 05/28/81-05/27/82                      FY81 \$15,000                      TOTAL \$15,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      MSFC/Parnell, T A                      13-Physics  
    MSFC/Watts, J W

**NAS 9-15152**                      **University of San Francisco**                      **1819**  
 Automated analysis system for HZE particle trace dosimeters  
*Period*                                      *Obligations*  
 02/01/77-12/31/81                      FY81 \$125,000                      TOTAL \$473,607  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      JSC/Robbins, D E                      56-Medical Sciences

**NAS 9-15337**                      **University of San Francisco**                      **1820**  
 Definition of Spacelab I experiment on high energy particle dosimetry  
*Period*                                      *Obligations*  
 04/01/77-12/31/81                      FY81                      TOTAL \$50,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      JSC/Thirolf, R G                      13-Physics  
    JSC/Huffstetler, W J

**NCA 2-670101**                      **University of San Francisco**                      **1821**  
 Histopathological evaluation of animals in radiation lifespan studies  
*Period*                                      *Obligations*  
 01/01/81-12/31/82                      FY81. \$29,808                      TOTAL \$29,808  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      ARC/Kraft, L M                      51-Biological Sci

**NCA 2-670902**                      **University of San Francisco**                      **1822**  
 The evaluation of structural and chemical alterations of bone and red blood cells in the restrained monkey model  
*Period*                                      *Obligations*  
 07/01/79-06/30/81                      FY81 \$22,142                      TOTAL \$59,642  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Furst, A                      ARC/Young, D R                      51-Biological Sci  
    ARC/Leon, H A

**NCC 2-47**                      **University of San Francisco**                      **1823**  
 Histopathological changes in rodents caused by HZE particle irradiation  
*Period*                                      *Obligations*  
 01/01/80-12/31/81                      FY81 \$44,351                      TOTAL \$78,349  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Benton, E V                      ARC/Kraft, L M                      51-Biological Sci

**NCC 2-85**                      **University of San Francisco**                      **1824**  
 Structure and function of isozymes Evolutionary aspects and role of oxygen in eucaryotic organisms  
*Period*                                      *Obligations*  
 06/01/80-05/31/82                      FY81 \$42,253                      TOTAL \$82,253  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Satyanarayana, T                      ARC/Klein, H P                      59-Life Sci, NEC  
    ARC/Volkman, C M

**NCC 2-135**                      **University of San Francisco**                      **1825**  
 Early cytological responses of cortical and trabecular bone to histopathogenesis of disuse osteoporosis in the restraint monkey model immobilization  
*Period*                                      *Obligations*  
 07/01/81-12/15/81                      FY81 \$15,000                      TOTAL \$15,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Brown, R J                      ARC/Young, D R                      56-Medical Sciences

**NAG 3-143**                      **University of Santa Clara**                      **1826**  
 Research and development of heat alcohol fuel usage in automobiles  
*Period*                                      *Obligations*  
 11/17/80-03/22/82                      FY81 \$389,850                      TOTAL \$389,850  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Pefley, R K                      LERC/Skorobatchkyl, M                      46-Mech Engr  
 Adelman, H G                      LERC/Migra, R

**NCA 2-685002**                      **University of Santa Clara**                      **1827**  
 Enzyme-linked immunosorbent assay (ELISA) for detecting upper respiratory tract infection  
*Period*                                      *Obligations*  
 10/01/79-03/31/82                      FY81 \$5,000                      TOTAL \$15,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Caren, L D                      ARC/Mandel, A D                      51-Biological Sci

**NCA 2-685003**                      **University of Santa Clara**                      **1828**  
 Bioassayable growth hormone Isolation development of a radioimmunoassay and validation of the assay  
*Period*                                      *Obligations*  
 10/01/79-01/31/82                      FY81 \$29,999                      TOTAL \$59,992  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Fast, T                      ARC/Grindeland, R E                      51-Biological Sci

**NCA 2-685004**                      **University of Santa Clara**                      **1829**  
 On the distribution of oxygen sensitivity among bacterial denitrifiers with particular emphasis to its ecological significance  
*Period*                                      *Obligations*  
 01/01/80-12/31/81                      FY81 \$23,064                      TOTAL \$43,753  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Tomlinson, G A                      ARC/Hochstein, L I                      51-Biological Sci



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**NCA 2-685005**      **University of Santa Clara**      **1830**  
Clay catalysis of prebiotic polymerizations Possible roles and  
mechanisms of action of metal ions

<i>Period</i>	<i>Obligations</i>	
12/01/79-11/30/81	FY81 \$22,648	TOTAL \$34,784
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sweeney, M A	ARC/Lawless, J E	12-Chemistry

**NCA 2-685006**      **University of Santa Clara**      **1831**  
A model for prebiotic translation Peptide catalysis of polynucleo-  
tide-templated amino acid condensation of fluctuating clay  
surfaces

<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/81	FY81 \$15,705	TOTAL \$30,207
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
White, D H	ARC/Chang, S	12-Chemistry

**NCA 2-685008**      **University of Santa Clara**      **1832**  
Ecological studies of the Laguna Figueroa del Norte

<i>Period</i>	<i>Obligations</i>	
04/15/80-05/15/81	FY81	TOTAL \$24,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tomlinson, G A	ARC/Deal, P H	54-Env Biology

**NCA 2-685101**      **University of Santa Clara**      **1833**  
LANDSAT display development

<i>Period</i>	<i>Obligations</i>	
02/09/81-11/30/82	FY81 \$14,416	TOTAL \$14,416
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Danielson, R L	ARC/Jones, H W	39-Env Sci, NEC

**NCA 2-685102**      **University of Santa Clara**      **1834**  
Video compression development

<i>Period</i>	<i>Obligations</i>	
08/01/81-02/28/82	FY81 \$18,720	TOTAL \$18,720
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Danielsen, R L	ARC/Jones, H W, Jr	22-Computer Science

**NCA 2-685906**      **University of Santa Clara**      **1835**  
Applications of the two-dimensional model of the Venus  
ionosphere

<i>Period</i>	<i>Obligations</i>	
06/01/79-06/30/81	FY81	TOTAL \$28,686
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McCormick, P T	ARC/Whitten, R C	13-Physics

**NCC 2-16**      **University of Santa Clara**      **1836**  
The effect of boundary conditions on finite difference solutions  
of fluid flow problems

<i>Period</i>	<i>Obligations</i>	
07/01/79-10/31/81	FY81 \$36,001	TOTAL \$86,604
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Vinokur, M	ARC/Lomax, H	41-Aero Engr

**NCC 2-49**      **University of Santa Clara**      **1837**  
An analysis of anticipated physcosocial requirements for future  
space flight

<i>Period</i>	<i>Obligations</i>	
11/01/79-10/31/81	FY81 \$4,992	TOTAL \$24,957
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Akins, F R	ARC/Connors, M	61-Biol Aspects

**NCC 2-60**      **University of Santa Clara**      **1838**  
Wind tunnel simulations of Martian sand storms

<i>Period</i>	<i>Obligations</i>	
02/01/80-04/30/82	FY81 \$71,500	TOTAL \$127,800
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greeley, R Williams, S	ARC/Margozzi, A P	99-Multi-Discip

**NCC 2-98**      **University of Santa Clara**      **1839**  
Investigation on the characteristics of turbulence on a step change  
of transverse surface strain in the swirling boundary layer

<i>Period</i>	<i>Obligations</i>	
10/01/80-12/31/81	FY81 \$46,432	TOTAL \$46,432
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Higuchi, H	ARC/Rubessin, M W	41-Aero Engr
	ARC/Marvin, J G	

**NCC 2-117**      **University of Santa Clara**      **1840**  
The application of pulsed-pumped stimulated Raman gain  
spectroscopy in combustion and flow diagnostics

<i>Period</i>	<i>Obligations</i>	
03/15/81-03/14/82	FY81 \$49,034	TOTAL \$49,034
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Perkins, P E	ARC/McKenzie, R L	13-Physics

**NCC 2-128**      **University of Santa Clara**      **1841**  
Visual prosthetic devices using texture analysis

<i>Period</i>	<i>Obligations</i>	
06/15/81-06/14/82	FY81 \$38,872	TOTAL \$38,872
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Healy, T J	ARC/Lum, H.	49-Engr, NEC

**NCC 2-130**      **University of Santa Clara**      **1842**  
Interpretation of Pioneer Venus orbiter data (PVOID) with the  
two-dimensional ionosphere model

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$11,791	TOTAL \$11,791
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McCormick, P T	ARC/Whitten, R C	19-Phys Sci, NEC

**NGT 05-017-998**      **University of Santa Clara**      **1843**  
Summer faculty fellowship program in engineering systems  
design

<i>Period</i>	<i>Obligations</i>	
01/01/79-12/31/81	FY81	TOTAL \$339,073
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Healy, T J	HQ-LC/Carter, C H	49-Engr, NEC

## NASA'S UNIVERSITY PROGRAM CALIFORNIA (Continued)

NSG 7330	University of Santa Clara	1844
Effect of layering on viscous flow of lunar craters		
<i>Period</i>		<i>Obligations</i>
03/01/77-02/28/81	FY81	TOTAL \$93,972
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Aggarwal, H R	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/Franche, B E	

<b>NAG 1-19</b>	<b>University of Southern California</b>	<b>1845</b>
<b>A study of streamwise vorticies</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/05/79-12/04/81</b>	<b>FY81 \$75,571</b>	<b>TOTAL \$149,649</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Blackwelder, R F</b>	<b>LARC/Hefner, J N</b>	<b>41-Aero Engr</b>
	<b>LARC/Anders, J. B</b>	

NAG 2-77		University of Southern California		1846
Slater orbitals in quantum chemistry calculations				
Period		Obligations		
01/01/81-12/31/81	FY81	\$49,000	TOTAL	\$49,000
Prin Invest	NASA Tech Officer		CASE Category	
Segal, G A	ARC/Langhoff, S R		12-Chemistry	
Partridge, H				

NAG 2-95		University of Southern California	1847
Determination of global H2 distribution from the Pioneer Venus orbiter ion mass spectrometer measurements			
Period	Obligations		
02/01/81-01/31/82	FY81	\$20,000	TOTAL \$20,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Kumar, S.	ARC/Fimmel, R	O	19-Phys Sci, NEC

<b>NAG 5-126</b>	<b>University of Southern California</b>	<b>1848</b>
<b>Search for shell lines and variability in the ultraviolet spectrum</b>		
<i>Period</i>	<i>Obligations</i>	
10/15/80-10/14/82	FY81 \$4,600	TOTAL \$4,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Peters, G	GSFC/Corrigan, J P	11-Astronomy

<b>NAGW 13</b>	<b>University of Southern California</b>	<b>1849</b>
<b>A three-dimensional observational study of the solar 5-minute oscillations</b>		
<i>Period</i>	<i>Obligations</i>	
<b>01/01/80-12/31/81</b>	<b>FY81 \$74,800</b>	<b>TOTAL \$142,800</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Rhodes, E J</b>	<b>HQ-SC/Chipman, E</b>	<b>11-Astronomy</b>
<b>Ulrich, R. K</b>	<b>HQ-SC/Tomayko, D W</b>	

NAGW 43		University of Southern California		1850
Creep of orthoenstatite at high temperature and low strain rates				
Period		Obligations		
03/01/80-02/28/82		FY81 \$52,996	TOTAL	\$92,828
Prin Invest		NASA Tech Officer	CASE Category	
Sammis, C G		HQ-SL/Quaide, W L	32-Geological Sci	
		HO-SL/French, B M		

NAGW 57	University of Southern California	1851
Comparative planetary aeronomy		Venus studies
<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/82	FY81 \$27,000	TOTAL \$47,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kumar, S	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

<b>NAGW 62</b>	<b>University of Southern California</b>	<b>1852</b>
<b>A scientific program in planetary atmospheric studies</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/80-10/31/81</b>	<b>FY81</b>	<b>TOTAL \$200,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Broadfoot, A L</b>	<b>HQ-SL/Murphy, R E</b>	<b>11-Astronomy</b>
	<b>HQ-SL/Brunk, W E</b>	

NAGW 106		University of Southern California		1853
A study of the Io plasma torus				
Period			Obligations	
11/01/80-10/31/81		FY81	\$50,000	TOTAL \$50,000
Prin Invest		NASA Tech Officer		CASE Category
Shemansky, D E		HQ-SL/Murphy, R E		11-Astronomy
		HO-SL/Brunk, W E		

NAGW 146		University of Southern California		1854	
Dynamics of the Jovian atmospheres (JDAP)					
Period		Obligations			
04/01/81-03/31/82		FY81 \$36,000		TOTAL \$36,000	
Prin Invest		NASA Tech Officer		CASE Category	
Maxworthy, T		HQ-SL/Murphy, R E		31-Atmos Sci	
		HQ-SL/Brunk, W E			

NAGW 147		University of Southern California		1855	
Stellar observations with the Voyager extreme ultraviolet objective grating spectrograph					
Period		Obligations			
03/01/81-02/28/82		FY81	\$25,000	TOTAL	\$25,000
Prin Invest		NASA Tech Officer		CASE Category	
Barry, P		HQ-SC/Weiler, E J		11-Astronomy	
		HQ-SC/Bogges, N W			

NAGW 161	University of Southern California	1856
Jovian disk and auroral observations	Continuing analysis plan	
<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$63,000	TOTAL \$63,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Broadfoot, L A	HQ-SL/Brinton, H C	13-Physics
	HQ-SL/Brunk, W E	

<b>NAGW 163</b>		<b>University of Southern California</b>	<b>1857</b>
A proposed study of the temporal morphology of the Io plasma utilizing the Pioneer and Voyager extreme ultraviolet data			
<i>Period</i>		<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$35,000	TOTAL	\$35,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Wu, F	HQ-SL/Brinton, H C	13-Physics	
	HQ-SL/Brunk, W E		

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NAS 2-6558**      **University of Southern California**      **1858**  
Pioneer F/G analysis of ultraviolet experiment  
*Period*      *Obligations*  
09/01/71-09/30/81      FY81 \$117,775      TOTAL \$1,468,891  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Judge, D L      ARC/Fimmel, R O      11-Astronomy  
ARC/Dyer, J W

**NGR 05-018-180**      **University of Southern California**      **1865**  
Photon-molecule interaction studies of the atmospheric gases  
*Period*      *Obligations*  
08/31/72-04/30/82      FY81 \$119,668      TOTAL \$520,195  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Judge, D L      HQ-SL/Murphy, R E      31-Atmos Sci  
HQ-SL/Brunk, W E

**NAS 2-10935**      **University of Southern California**      **1859**  
Technology identification and application for the advanced technology display house  
*Period*      *Obligations*  
01/01/80-09/30/80      FY81 \$44,908      TOTAL \$44,908  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Unavailable      ARC/Halley, H      49-Engr, NEC

**NGR 05-018-181**      **University of Southern California**      **1866**  
Analysis of Pioneer solar wind observations of the interplanetary medium  
*Period*      *Obligations*  
10/25/72-09/30/80      FY81      TOTAL \$196,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Intrigitor, D S      HQ-SC/Schmerling, E R      13-Physics

**NASW 3235**      **University of Southern California**      **1860**  
Operation of NASA industrial application center  
*Period*      *Obligations*  
04/01/78-03/31/81      FY81 \$30,000      TOTAL \$935,429  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Mixer, R      HQ-ET/Bivins, R E      99-Multi-Discip  
HQ-ET/Ault, L

**NGR 05-018-185**      **University of Southern California**      **1867**  
Study of the structure of magnetopause using simultaneous OGO-5 magnetic field light ion mass  
*Period*      *Obligations*  
06/27/73-06/30/80      FY81      TOTAL \$25,795  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Intrigitor, D S      HQ-SC/Cauffman, D P      13-Physics

**NASW 3461**      **University of Southern California**      **1861**  
Technology transfer to minority enterprises  
*Period*      *Obligations*  
01/12/81-03/31/82      FY81 \$82,318      TOTAL \$82,318  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
King, R G      HQ-ET/Gilbert, R L      99-Multi-Discip  
Mixer, R      HQ-ET/Whitten, R

**NSG 1401**      **University of Southern California**      **1868**  
Investigation of an improved theory for the analysis of natural and manmade layered structures  
*Period*      *Obligations*  
03/15/77-02/28/81      FY81      TOTAL \$112,203  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Seide, P      LARC/Stein, M      41-Aero Engr

**NASW 3470**      **University of Southern California**      **1862**  
Operation of NASA industrial application center  
*Period*      *Obligations*  
04/01/81-03/31/82      FY81 \$219,762      TOTAL \$219,762  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Mixer, R      HQ-ET/Bivins, R G      99-Multi-Discip  
King, R      HQ-ET/Ault, L A

**NSG 2351**      **University of Southern California**      **1869**  
Theoretical developments in the computation of the electronic properties of molecules  
*Period*      *Obligations*  
01/01/79-12/31/81      FY81 \$25,000      TOTAL \$73,560  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Segal, G A      ARC/Jaffee, R L      21-Mathematics

**NCA 2-730101**      **University of Southern California**      **1863**  
The escape of H2O from Venus  
*Period*      *Obligations*  
07/01/81-06/30/82      FY81 \$20,003      TOTAL \$20,003  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Kumar, S      ARC/Pollack, J B      11-Astronomy

**NSG 3243**      **University of Southern California**      **1870**  
Axial field permanent magnet motors for electrical vehicles  
*Period*      *Obligations*  
01/08/79-11/15/81      FY81 \$19,984      TOTAL \$143,984  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Cambell, P E      LERC/Maslowski, E A      45-Elec Engr

**NGR 05-018-178**      **University of Southern California**      **1864**  
Dynamics of rotating-stratified flows with applications to the Jovian atmosphere  
*Period*      *Obligations*  
09/11/72-08/31/82      FY81 \$90,833      TOTAL \$464,265  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Maxworthy, T      HQ-SL/Murphy, R E      31-Atmos Sci  
HQ-SL/Brunk, W E

**NSG 5108**      **University of Southern California**      **1871**  
Rocket experiments to measure the solar intensity and profile  
*Period*      *Obligations*  
04/01/76-01/31/82      FY81 \$91,966      TOTAL \$468,142  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Judge, D L      GSFC/Bissell, E E      13-Physics  
Carlson, R W      HQ-SL/Murphy, R E

**NASA'S UNIVERSITY PROGRAM  
CALIFORNIA (Continued)**

**NSG 5356**                      **University of Southern California**                      **1872**  
Study of the nature of shells in stars

<i>Period</i>	<i>Obligations</i>	
06/01/79-05/31/81	FY81	TOTAL \$4,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Peters, G J	GSFC/Kupperman, J E, Jr	11-Astronomy

**NSG 5412**                      **University of Southern California**                      **1873**  
Observations of the Sun, Alpha Cen A and cluster stars

<i>Period</i>	<i>Obligations</i>	
11/01/79-10/31/80	FY81	TOTAL \$13,600
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Barry, D C	GSFC/Bogges, A	11-Astronomy

**NSG 5422**                      **University of Southern California**                      **1874**  
A comparative study of the far ultraviolet spectra of BE stars

<i>Period</i>	<i>Obligations</i>	
10/15/79-12/31/81	FY81 \$12,500	TOTAL \$33,400
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Peters, G J	GSFC/Bogges, A	11-Astronomy

**NSG 7367**                      **University of Southern California**                      **1875**  
Complementary pairing of amino acids, schiff bases and a reverse translation mechanism for the origin of the genetic code under pre-biotic conditions

<i>Period</i>	<i>Obligations</i>	
10/01/77-10/30/81	FY81 \$75,992	TOTAL \$287,094
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Strehler, B L	HQ-SB/Devincenzi, D L	51-Biological Sci

**NSG 7535**                      **University of Southern California**                      **1876**  
Development of room temperature mercuric iodide X-ray detectors for in-site analysis of extra terrestrial objects

<i>Period</i>	<i>Obligations</i>	
01/26/79-11/30/81	FY81 \$67,489	TOTAL \$183,942
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dabrowski, A J	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7595**                      **University of Southern California**                      **1877**  
A study of atmospheric development of exospheric planetary bodies

<i>Period</i>	<i>Obligations</i>	
05/01/79-01/31/82	FY81 \$5,875	TOTAL \$91,792
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shemansky, D E	HQ-SL/Brinton, H C	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NSG 7644**                      **University of Southern California**                      **1878**  
Application of improved detector technology to a continuing program of solar-system observations

<i>Period</i>	<i>Obligations</i>	
11/02/79-07/31/82	FY81 \$200,000	TOTAL \$300,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Broadfoot, A L	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

**COLORADO**

**NAG 3-197**                      **Colorado School of Mines**                      **1879**  
Studies of the mechanisms of jet fuel/instability

<i>Period</i>	<i>Obligations</i>	
08/01/81-07/31/82	FY81 \$59,934	TOTAL \$59,934
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Daniel, S R	LERC/Wong, E L	12-Chemistry
	LERC/Bittker, D A	

**NAG 3-25**                      **Colorado State University**                      **1880**  
Ion implantation to inhibit the corrosion of ferrous metals

<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/81	FY81	TOTAL \$9,301
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilbur, P J	LERC/Kerslake, W R	
Robinson, R S		47-Materials Engr

**NAG 3-34**                      **Colorado State University**                      **1881**  
Atomic hydrogen rocket engine

<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/81	FY81	TOTAL \$24,981
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Etters, R D	LERC/Nakanishi, S	13-Physics

**NAG 3-40**                      **Colorado State University**                      **1882**  
Development of models for nonlinear fracture processes

<i>Period</i>	<i>Obligations</i>	
06/01/80-07/15/82	FY81 \$57,565	TOTAL \$77,836
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, F W	LERC/Smith, G T	46-Mech Engr
	LERC/Orange, T W	

**NAG 3-43**                      **Colorado State University**                      **1883**  
Ion beam microtexturing of surfaces

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81 \$20,239	TOTAL \$40,201
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Robinson, R S	LERC/Kerslake, W R	
Kaufman, H A		19-Phys Sci, NEC

**NAG 3-209**                      **Colorado State University**                      **1884**  
Sputtering phenomena in ion thrusters

<i>Period</i>	<i>Obligations</i>	
12/01/81-11/30/82	FY81 \$29,660	TOTAL \$29,660
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Robinson, R S	LERC/Mantenieks, M A	13-Physics
Kaufman, H R		

**NASA'S UNIVERSITY PROGRAM**  
**COLORADO (Continued)**

**NAG 5-58** **Colorado State University** **1885**  
 A laboratory investigation of the reflective properties of simulated,  
 optically thick clouds  
*Period* *Obligations*  
 05/15/80-05/14/82 **FY81 \$63,041** **TOTAL \$135,050**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 McKee, T B GSFC/King, M D 31-Atmos Sci

**NAG 5-88** **Colorado State University** **1886**  
 Radiometer measurements of snowpack  
*Period* *Obligations*  
 08/01/80-09/30/81 **FY81** **TOTAL \$40,508**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Boyne, H S GSFC/Rango, A 19-Phys Sci, NEC

**NAG 5-136** **Colorado State University** **1887**  
 Atmospheric planetary wave response to extreme forcing  
*Period* *Obligations*  
 02/01/81-01/31/82 **FY81 \$65,000** **TOTAL \$65,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Stevens, D E GSFC/Shukla, J 31-Atmos Sci  
 Reiter, E R

**NAG 9-10** **Colorado State University** **1888**  
 Life spans of skin fibroblasts from irradiated primates  
*Period* *Obligations*  
 06/16/80-06/15/82 **FY81** **TOTAL \$25,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Lett, J T JSC/Barnes, C M 54-Env Biology

**NAGW 8** **Colorado State University** **1889**  
 Experiments with phase transitions at very high pressure  
*Period* *Obligations*  
 10/01/79-11/29/81 **FY81 \$100,000** **TOTAL \$185,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Spain, I L LERC/Jones, W R 13-Physics

**NAS 1-15580** **Colorado State University** **1890**  
 Satellite cloud digital data tapes (GOES)  
*Period* *Obligations*  
 03/13/79-03/31/81 **FY81 \$10** **TOTAL \$112,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Vonderhaar, T H LARC/Harrison, E F 31-Atmos Sci  
 LARC/Cooper, J E

**NAS 1-16465** **Colorado State University** **1891**  
 Scientific investigations for the Earth radiation budget experiment  
 (ERBE)  
*Period* *Obligations*  
 09/30/80-09/29/85 **FY81** **TOTAL \$25,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Vonderhaar, T H LARC/Hall, J B 31-Atmos Sci  
 LARC/Barkstrom, B R

**NAS 5-22959** **Colorado State University** **1892**  
 Earth radiation budget sensor support  
*Period* *Obligations*  
 01/23/76-10/01/81 **FY81** **TOTAL \$216,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Vonderhaar, T H GSFC/Nelsen, E D 39-Env Sci, NEC

**NCA 2-165001** **Colorado State University** **1893**  
 A vectorized multigrid for the Cauchy-Riemann equations  
*Period* *Obligations*  
 05/01/80-08/31/81 **FY81 \$12,100** **TOTAL \$17,050**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Thomas, J W ARC/Lomax, H 21-Mathematics

**NGR 06-002-112** **Colorado State University** **1894**  
 An experimental investigation of hollow cathode discharge start-up  
 and operation  
*Period* *Obligations*  
 12/21/70-11/29/81 **FY81 \$107,974** **TOTAL \$748,060**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Wilbur, P J LERC/Kerslake, W R 46-Mech Engr

**NGR 06-002-159** **Colorado State University** **1895**  
 Bulk properties of atomic triplet hydrogen and high pressure  
 equation of state for solid hydrogen  
*Period* *Obligations*  
 12/04/72-04/29/82 **FY81 \$49,967** **TOTAL \$288,186**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Etters, R D LERC/Hendricks, R C 13-Physics

**NGT 06-002-800** **Colorado State University** **1896**  
 Graduate student researchers program  
*Period* *Obligations*  
 09/01/80-08/31/82 **FY81 \$12,100** **TOTAL \$21,910**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Smith, J A HQ-LC/Carter, C H 54-Env Biology

**NSG 1594** **Colorado State University** **1897**  
 Approaching the ultimate velocimeter Laser techniques for  
 measuring molecular flows  
*Period* *Obligations*  
 02/01/79-02/28/82 **FY81 \$86,874** **TOTAL \$208,511**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 She, C Y LARC/Exton, R J 13-Physics  
 Fairbanks, W M, Jr

**NSG 3011** **Colorado State University** **1898**  
 Experimental investigations of argon and xenon ions sources  
*Period* *Obligations*  
 07/01/74-11/30/81 **FY81 \$90,020** **TOTAL \$405,946**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Kaufman, H R LERC/Kerslake, W R 42-Astro Engr  
 Robinson, R S  
 Etters, R

**NASA'S UNIVERSITY PROGRAM  
COLORADO (Continued)**

**NSG 3086** **Colorado State University** **1899**  
Industrial ion source technology  
*Period* *Obligations*  
11/15/75-04/13/81 **FY81** **TOTAL \$215,315**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kaufman, H R LERC/Mirtich, M J 13-Physics

**NSG 3127** **Colorado State University** **1900**  
Effects of turbulence on laminar separation on aerodynamic surfaces such as airfoils blading  
*Period* *Obligations*  
10/01/76-07/14/82 **FY81 \$65,000** **TOTAL \$323,837**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sadeh, W Z LERC/Sockol, P M 41-Aero Engr

**NSG 3145** **Colorado State University** **1901**  
Laboratory simulation of irradiation-induced dielectric breakdown in spacecraft charging  
*Period* *Obligations*  
04/01/77-12/01/79 **FY81** **TOTAL \$95,490**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Yadlowsky, E J LERC/Staskus, J V 13-Physics  
Churchill, R J

**NSG 3196** **Colorado State University** **1902**  
Space environmental effects on high voltage solar arrays  
*Period* *Obligations*  
05/15/78-05/12/82 **FY81 \$39,948** **TOTAL \$159,250**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kaufman, H R LERC/Grier, N T 13-Physics

**NSG 5341** **Colorado State University** **1903**  
Research of satellite inferences of convective storm intensity  
*Period* *Obligations*  
05/01/79-04/30/82 **FY81 \$16,239** **TOTAL \$159,662**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Cotton, W R GSFC/Heymsfield, G M 31-Atmos Sci  
Tripoli, G J

**NSG 5352** **Colorado State University** **1904**  
Study of the Global Positioning System for maritime concepts  
*Period* *Obligations*  
06/01/79-12/31/81 **FY81** **TOTAL \$54,910**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Parkenson, B W GSFC/Taylor, M B 45-Elec Engr  
Winn, C B

**NSG 5357** **Colorado State University** **1905**  
Initial studies of middle and upper tropospheric stratiform clouds  
*Period* *Obligations*  
06/01/79-12/31/81 **FY81** **TOTAL \$157,649**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Cox, S K GSFC/Curran, R J 31-Atmos Sci

**NSG 9045** **Colorado State University** **1906**  
Effects of heavy ions on optic tissues  
*Period* *Obligations*  
10/01/76-06/30/82 **FY81** **TOTAL \$209,500**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lett, J T JSC/Nachtwey, D S 59-Life Sci, NEC

**NAG 5-1** **Fort Lewis College** **1907**  
Investigations relative to statistical procedures for thermal vacuum test optimization  
*Period* *Obligations*  
01/15/80-07/31/81 **FY81** **TOTAL \$32,991**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Williams, R E GSFC/Kruger, R 49-Engr, NEC  
Byrd, J W

**NAG 5-162** **Fort Lewis College** **1908**  
Dynamic processing element memory allocation for the massively parallel processor  
*Period* *Obligations*  
04/01/81-03/31/82 **FY81 \$26,621** **TOTAL \$26,621**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Bell, G W GSFC/Fischer, J R 22-Computer Science  
GSFC/Wallgreen, K

**NAG 1-59** **University of Colorado - Boulder** **1909**  
Effect of external flow in existing turbulence  
*Period* *Obligations*  
04/03/80-04/02/83 **FY81 \$50,000** **TOTAL \$70,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Uberoi, M S LARC/Stainback, P C 41-Aero Engr  
LARC/Harvey, W D

**NAG 1-170** **University of Colorado - Boulder** **1910**  
Molecular photofragmentation processes related to solar-pumped gas laser development  
*Period* *Obligations*  
04/01/81-03/31/82 **FY81 \$50,000** **TOTAL \$50,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Leone, S R LARC/Jalufka, N W 13-Physics  
LARC/Conway, E J

**NAG 2-58** **University of Colorado - Boulder** **1911**  
Influence of gravity independent parameters on the constitutive behavior of soil  
*Period* *Obligations*  
08/01/80-03/31/82 **FY81 \$42,280** **TOTAL \$75,420**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sture, S ARC/Brooks, W F 44-Civil Engr  
LARC/Lum, H

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NAG 5-15**                      **University of Colorado - Boulder**                      **1912**  
Study of circumstellar shells and stellar wind variability in  
supergiant stars

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81	TOTAL \$10,067
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Snow, T P	GSFC/Corrigan, J P	11-Astronomy

**NAG 5-142**                      **University of Colorado - Boulder**                      **1919**  
Research relative to short-term cryosphere cloud interactions near  
the snow/ice limit

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$56,145	TOTAL \$56,145
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Barry, R G	GSFC/Carsey, F D	31-Atmos Sci
	GSFC/Zwally, H J	

**NAG 5-21**                      **University of Colorado - Boulder**                      **1913**  
Gravity measurements in support of long baseline geodesy

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81	TOTAL \$40,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Whitcomb, J H	GSFC/Kouns, C W	32-Geological Sci
Anderson, D		

**NAG 5-193**                      **University of Colorado - Boulder**                      **1920**  
Spectroscopic studies of interstellar matter and stellar mass loss

<i>Period</i>	<i>Obligations</i>	
07/01/81-12/31/81	FY81 \$9,000	TOTAL \$9,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shull, J M	GSFC/Boggess, A	11-Astronomy

**NAG 5-22**                      **University of Colorado - Boulder**                      **1914**  
Modeling of tectonophysical distortion from measurements of  
long-baseline geodetic data

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81 \$35,000	TOTAL \$62,512
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Whitcomb, J H	GSFC/Kouns, C W	32-Geological Sci
Harrison, J C		

**NAG 5-199**                      **University of Colorado - Boulder**                      **1921**  
International Ultraviolet experiment studies

<i>Period</i>	<i>Obligations</i>	
07/15/81-01/14/82	FY81 \$12,652	TOTAL \$12,652
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ayres, T R	GSFC/Boggess, A	11-Astronomy
Linsky, J L		
Simon, T		

**NAG 5-78**                      **University of Colorado - Boulder**                      **1915**  
Spectroscopic observations of selected stellar systems

<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY81 \$32,360	TOTAL \$42,360
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Conti, P S	GSFC/Boggess, A	11-Astronomy

**NAG 8-300**                      **University of Colorado - Boulder**                      **1922**  
A study of X-ray emission from A and A-peculiar stars

<i>Period</i>	<i>Obligations</i>	
12/21/79-12/20/80	FY81	TOTAL \$4,010
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Snow, T P	MSFC/Manning, H S	11-Astronomy

**NAG 5-82**                      **University of Colorado - Boulder**                      **1916**  
International Ultraviolet Explorer (IUE) studies of cool stars

<i>Period</i>	<i>Obligations</i>	
07/01/80-11/30/81	FY81 \$53,556	TOTAL \$71,356
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Linsky, J L	GSFC/Boggess, A	11-Astronomy
Stencel, R E		

**NAG 8-316**                      **University of Colorado - Boulder**                      **1923**  
Are hot coroneae ubiquitous among late type stars? A probe of  
the corona wind boundary in the HR diagram

<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/81	FY81	TOTAL \$3,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ayres, T R	MSFC/Jones, J B, Jr	11-Astronomy
Haisch, B M		

**NAG 5-96**                      **University of Colorado - Boulder**                      **1917**  
Study of reflection grating spectrometers for X-ray astronomy

<i>Period</i>	<i>Obligations</i>	
09/01/80-02/28/82	FY81 \$63,675	TOTAL \$134,450
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cash, W C	GSFC/Guidotti, J G	11-Astronomy
	HQ-SC/Kaluzienski, L J	

**NAG 8-327**                      **University of Colorado - Boulder**                      **1924**  
X-ray emission from normal and peculiar A stars with the Einstein  
Observatory and search for soft X-ray variability in OB stars

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/81	FY81	TOTAL \$22,427
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Snow, T P	MSFC/Jones, J B	11-Astronomy
Cash, W C		
Grady, C		

**NAG 5-111**                      **University of Colorado - Boulder**                      **1918**  
Interstellar observations of OB associations with the Capernicus  
satellite

<i>Period</i>	<i>Obligations</i>	
10/01/80-09/30/81	FY81	TOTAL \$11,557
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shull, J M	GSFC/Corrigan, J P	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
COLORADO (Continued)**

**NAG 8-334**                      **University of Colorado - Boulder**                      **1925**  
Studies of the correlation between X-ray emission from stars and presence of a strong stellar wind and stellar rotation rate and a study of coronae in three peculiar late-type stars

<i>Period</i>		<i>Obligations</i>
02/15/80-02/14/81	FY81	TOTAL \$16,300
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Linsky, J L	MSFC/Jones, J B	11-Astronomy
Ayres, T R		
Stencel, R E		

**NAG 8-353**                      **University of Colorado - Boulder**                      **1926**  
Study of the giant X-ray ring of Cygnus with Einstein Observatory Search for X-ray superbubbles and for low temperatures X-rays from Capella with the Einstein Observatory

<i>Period</i>		<i>Obligations</i>
06/27/80-12/31/81	FY81	TOTAL \$16,200
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cash, W C	MSFC/Swearingen, J C	11-Astronomy
Charles, P A		

**NAG 8-382**                      **University of Colorado - Boulder**                      **1927**  
A critical test of the rotation-coronae correlation with selected Hertzsprung gap stars

<i>Period</i>		<i>Obligations</i>
09/22/80-09/21/81	FY81	TOTAL \$7,775
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simon, T S	MSFC/Stone, J F	11-Astronomy
Linsky, J		

**NAG 8-384**                      **University of Colorado - Boulder**                      **1928**  
Study of the X-ray superbubble in Cygnus using data from HEAO-1

<i>Period</i>		<i>Obligations</i>
12/22/80-12/22/81	FY81 \$4,999	TOTAL \$4,999
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cash,, W C, Jr	MSFC/Stone, J F	11-Astronomy

**NAG 8-398**                      **University of Colorado - Boulder**                      **1929**  
A sensitive search for coronal emission from the archetype giants (BOO and AQR)

<i>Period</i>		<i>Obligations</i>
06/03/81-06/02/82	FY81 \$7,355	TOTAL \$7,355
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ayres, T R	MSFC/Stone, J F	11-Astronomy

**NAG 8-400**                      **University of Colorado - Boulder**                      **1930**  
Search for coronal X-ray emission from the young stars in the Ursa Major cluster and stream

<i>Period</i>		<i>Obligations</i>
07/10/81-07/09/82	FY81 \$8,974	TOTAL \$8,974
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Linsky, J L	MSFC/Stone, J F	11-Astronomy

**NAGW 91**                      **University of Colorado - Boulder**                      **1931**  
Turbulence and wave-particle interactions in solar-terrestrial plasmas

<i>Period</i>		<i>Obligations</i>
07/01/80-06/30/82	FY81 \$305,000	TOTAL \$400,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dulk, G A	HQ-SC/Birmingham, T J	13-Physics

**NAGW 155**                      **University of Colorado - Boulder**                      **1932**  
A program to study high attitude cloud distributions for the Jupiter data analysis program

<i>Period</i>		<i>Obligations</i>
04/01/81-03/31/82	FY81 \$37,473	TOTAL \$37,473
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hord, C W	HQ-SL/Brinton, H C	13-Physics
	HQ-SL/Brunk, W E	

**NAGW 156**                      **University of Colorado - Boulder**                      **1933**  
Analysis of Voyager imaging methane band photometry

<i>Period</i>		<i>Obligations</i>
04/01/81-03/31/82	FY81 \$11,000	TOTAL \$11,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
West, R A	HQ-SL/Brinton, H C	13-Physics
	HQ-SL/Brunk, W E	

**NAGW 197**                      **University of Colorado - Boulder**                      **1934**  
Theoretical research programs in physics at planetary atmospheres, radiative transfer theory and data interpretation

<i>Period</i>		<i>Obligations</i>
07/01/81-06/30/82	FY81 \$74,995	TOTAL \$74,995
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hord, C W	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NAGW 203**                      **University of Colorado - Boulder**                      **1935**  
Study of grazing incidence spectrometer for ultraviolet astronomy

<i>Period</i>		<i>Obligations</i>
05/15/81-05/14/83	FY81 \$52,918	TOTAL \$52,918
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cash, W C	HQ-SC/Weiler, E J	11-Astronomy
McClintock, W E	HQ-SC/Bogges, N W	

**NAS 2-9477**                      **University of Colorado - Boulder**                      **1936**  
Pioneer Venus data analysis of the orbiter ultraviolet spectrometer experiment

<i>Period</i>		<i>Obligations</i>
08/30/77-09/30/81	FY81 \$182,458	TOTAL \$792,951
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stewart, I A	ARC/Fimmel, R O	19-Phys Sci, NEC
Thomas, G E		



# NASA'S UNIVERSITY PROGRAM COLORADO (Continued)

NAS 5-11405 University of Colorado - Boulder 1937  
University of Colorado ultraviolet nitric oxide experiment for  
atmosphere Explorer

Period	Obligations
03/17/71-09/30/81	FY81 TOTAL \$1,065,642
Prin Invest	NASA Tech Officer CASE Category
Barth, C	GSFC/Bullock, G D 31-Atmos Sci
Stewart, A I	

NAS 5-22833 University of Colorado - Boulder 1938  
Theoretical calculations of spectral features in the expanding  
envelopes of early-type stars

Period	Obligations
11/03/75-07/01/80	FY81 TOTAL \$83,380
Prin Invest	NASA Tech Officer CASE Category
Conti, P S	GSFC/Boggess, A 11-Astronomy

NAS 5-23274 University of Colorado - Boulder 1939  
Development of models for physical properties of stellar  
chromospheres

Period	Obligations
08/01/73-09/30/80	FY81 TOTAL \$129,753
Prin Invest	NASA Tech Officer CASE Category
Linsky, J L	GSFC/Boggess, A 11-Astronomy

NAS 5-25887 University of Colorado - Boulder 1940  
Nutation and polar motion of the Earth number three

Period	Obligations
09/25/79-12/24/80	FY81 TOTAL \$26,745
Prin Invest	NASA Tech Officer CASE Category
Smith, M L	GSFC/Stephanides, C C 32-Geological Sci

NAS 5-25957 University of Colorado - Boulder 1941  
Magnetic field monitor satellite investigation Investigation of  
geomagnetic field forecasting and fluid dynamics of the core

Period	Obligations
12/27/79-08/27/82	FY81 \$1,500 TOTAL \$74,748
Prin Invest	NASA Tech Officer CASE Category
Beitton, E R	GSFC/Oseroff, H 32-Geological Sci

NAS 5-26170 University of Colorado - Boulder 1942  
Study of the ultraviolet ozone spectrometer for the upper  
atmosphere research satellites (UARS)

Period	Obligations
09/23/80-12/31/81	FY81 \$41,200 TOTAL \$191,797
Prin Invest	NASA Tech Officer CASE Category
Mount, G H	GSFC/Browne, Jr, W H 31-Atmos Sci

NAS 5-26172 University of Colorado - Boulder 1943  
Study of the ultraviolet solar spectral irradiance experiment for  
the upper atmosphere research satellites (UARS)

Period	Obligations
09/23/80-12/31/81	FY81 \$38,700 TOTAL \$177,811
Prin Invest	NASA Tech Officer CASE Category
Rottman, G J	GSFC/Browne, W H 31-Atmos Sci
London, J	

NAS 5-26303 University of Colorado - Boulder 1944  
Study of the response of upper atmosphere parameters to variation  
of solar activity (UARS)

Period	Obligations
10/01/80-12/30/81	FY81 \$13,999 TOTAL \$24,999
Prin Invest	NASA Tech Officer CASE Category
London, J	GSFC/Reber, C A 31-Atmos Sci

NAS 5-26409 University of Colorado - Boulder 1945  
Operation of the IUE data center at Boulder

Period	Obligations
03/24/81-03/24/82	FY81 \$62,636 TOTAL \$62,636
Prin Invest	NASA Tech Officer CASE Category
Snow, T P	GSFC/Boggess, A 11-Astronomy

NAS 5-26535 University of Colorado - Boulder 1946  
Study of solar energetic particles acceleration and propagation

Period	Obligations
04/23/81-03/22/82	FY81 \$15,450 TOTAL \$15,450
Prin Invest	NASA Tech Officer CASE Category
Zweibel, E G	GSFC/Ramaty, R 13-Physics

NAS 8-31958 University of Colorado - Boulder 1947  
Study of geophysical fluid dynamics with electro-hydrodynamics  
polarization forces

Period	Obligations
03/26/76-12/31/81	FY81 \$75,328 TOTAL \$370,328
Prin Invest	NASA Tech Officer CASE Category
Toomre, J	MSFC/Jones, C T 39-Env Sci, NEC
Hart, J F	MSFC/Fichtl, G

NAS 8-33338 University of Colorado - Boulder 1948  
Soft X-ray spectroscopy of Hercules X-1

Period	Obligations
02/16/79-11/15/80	FY81 TOTAL \$9,000
Prin Invest	NASA Tech Officer CASE Category
McCray, R	MSFC/Jones, J B, Jr 11-Astronomy
Boynton, P	
Shull, J M	

NAS 8-33342 University of Colorado - Boulder 1949  
A coordinated X-ray and ultraviolet study of stellar coronae,  
transition regions and chromospheres

Period	Obligations
02/16/79-02/15/80	FY81 TOTAL \$6,560
Prin Invest	NASA Tech Officer CASE Category
Ayres, T A	MSFC/Jones, J B, Jr 11-Astronomy
Linsky, J L	

NGL 06-003-052 University of Colorado - Boulder 1950  
Theoretical and experimental research program in physics of  
planetary atmospheres

Period	Obligations
06/28/66-06/30/82	FY81 \$274,877 TOTAL \$4,740,831
Prin Invest	NASA Tech Officer CASE Category
Hord, C W	HQ-SL/Murphy, R E 31-Atmos Sci
	HQ-SL/Brnnton, H C

**NASA'S UNIVERSITY PROGRAM**  
**COLORADO (Continued)**

**NGL 06-003-057**      **University of Colorado - Boulder**      **1951**  
 Basic research in solar physics

<i>Period</i>	<i>Obligations</i>
09/05/67-10/31/81	FY81 \$72,458    TOTAL \$1,215,458
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Linsky, J L	HQ-SC/Chipman, E      13-Physics

**NGL 06-003-200**      **University of Colorado - Boulder**      **1952**  
 Application of space technology to practical problems such as those currently facing the mountain sections of the state of Colorado

<i>Period</i>	<i>Obligations</i>
07/11/72-04/30/82	FY81    TOTAL \$825,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ives, J D	HQ-ET/Vitale, J A    39-Env Sci, NEC

**NGR 06-003-127**      **University of Colorado - Boulder**      **1953**  
 Data reduction-coordinated experiments

<i>Period</i>	<i>Obligations</i>
08/18/69-01/31/81	FY81    TOTAL \$996,906
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Barth, C A	HQ-SL/Brinton, H C    31-Atmos Sci

**NSG 2248**      **University of Colorado - Boulder**      **1954**  
 Heterogeneous chemistry Association reactions, cluster formation, and surface phenomena

<i>Period</i>	<i>Obligations</i>
07/01/77-06/30/82	FY81 \$44,000    TOTAL \$225,595
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Castleman, A W	ARC/Pollack, J B    12-Chemistry
	ARC/Whitten, R C

**NSG 5103**      **University of Colorado - Boulder**      **1955**  
 Rocket research in the ultraviolet airglow and aurora of planetary atmospheres

<i>Period</i>	<i>Obligations</i>
02/01/76-03/31/82	FY81 \$199,535    TOTAL \$1,149,346
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Barth, C A	GSFC/Guidotti, J G    19-Phys Sci, NEC
Hathaway, D D	HQ-SL/Brinton, H C

**NSG 5153**      **University of Colorado - Boulder**      **1956**  
 Research of observed and theoretical variations of atmospheric ozone

<i>Period</i>	<i>Obligations</i>
01/17/77-01/31/82	FY81 \$77,970    TOTAL \$365,868
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
London, J	GSFC/Reber, C A    31-Atmos Sci

**NSG 5178**      **University of Colorado - Boulder**      **1957**  
 Rocket research in solar ultraviolet spectroscopy

<i>Period</i>	<i>Obligations</i>
06/01/77-01/10/82	FY81 \$166,000    TOTAL \$699,590
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Rottman, G T	GSFC/Guidotti, J G    13-Physics
Orrall, F Q	HQ-SC/Bohlin, J D

**NSG 5300**      **University of Colorado - Boulder**      **1958**  
 Research of stellar wind velocity in Alpha Cam using ultraviolet data from the International Ultraviolet Explorer (IUE)

<i>Period</i>	<i>Obligations</i>
09/15/78-08/31/82	FY81 \$243,538    TOTAL \$284,835
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Snow, T P, Jr	GSFC/Boggess, A    11-Astronomy
Grady, C	
Sear, C G	

**NSG 5303**      **University of Colorado - Boulder**      **1959**  
 Ultraviolet measurements with high spectral resolution

<i>Period</i>	<i>Obligations</i>
09/15/78-02/14/82	FY81 \$185,019    TOTAL \$835,615
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Snow, T P	GSFC/Guidotti, J G    11-Astronomy
McClintock, W E	HQ-SC/Weiler, E J

**NSG 5318**      **University of Colorado - Boulder**      **1960**  
 Supergranulation velocity fields and their relation to magnetically active regions

<i>Period</i>	<i>Obligations</i>
01/15/79-02/14/82	FY81    TOTAL \$40,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Gebbie, K B	GSFC/Wende, C    31-Atmos Sci

**NSG 5355**      **University of Colorado - Boulder**      **1961**  
 Analysis of interstellar and circumstellar absorption line profiles

<i>Period</i>	<i>Obligations</i>
06/01/79-06/30/81	FY81    TOTAL \$28,229
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Snow, P, Jr	GSFC/Wende, C D    11-Astronomy

**NSG 5372**      **University of Colorado - Boulder**      **1962**  
 Theoretical studies of odd nitrogen in the mesosphere and lower thermosphere

<i>Period</i>	<i>Obligations</i>
06/01/79-07/31/81	FY81 \$15,000    TOTAL \$93,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Rusch, D W	GSFC/Reed, E I    31-Atmos Sci

**NSG 7128**      **University of Colorado - Boulder**      **1963**  
 Studies of X-ray ultraviolet and optical emission from galactic X-ray sources

<i>Period</i>	<i>Obligations</i>
03/01/75-09/30/81	FY81    TOTAL \$201,728
<i>Pnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
McCray, R	HQ-SC/Kaluzienski, L    11-Astronomy
	HQ-SC/Holt, S S

# NASA'S UNIVERSITY PROGRAM COLORADO (Continued)

**NSG 7231**                      **University of Colorado - Boulder**                      **1964**  
A rocket program to measure minor neutral species in the Earth's atmosphere from 30 km to 110 km

<i>Period</i>	<i>Obligations</i>
04/01/76-09/30/81	FY81 \$119,659      TOTAL \$520,999
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Thomas, R J	HQ-EB/Watson, R T      31-Atmos Sci
Rusch, D W	HQ-EB/Chan, K R
Sonders, R W	

**NSG 7287**                      **University of Colorado - Boulder**                      **1965**  
Study of the solar corona using radio observation

<i>Period</i>	<i>Obligations</i>
07/01/76-10/31/81	FY81 \$50,000      TOTAL \$192,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Dulk, G A	HQ-SC/Chipman, E      13-Physics

**NSG 7291**                      **University of Colorado - Boulder**                      **1966**  
Research in solar physics with emphasis on empirical non-equilibrium thermodynamics

<i>Period</i>	<i>Obligations</i>
09/01/76-12/31/82	FY81 \$26,500      TOTAL \$128,833
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Thomas, R N	HQ-SC/Chipman, E      13-Physics

**NSG 7459**                      **University of Colorado - Boulder**                      **1967**  
Development and test of multi-anode microchannel array detector system

<i>Period</i>	<i>Obligations</i>
06/01/78-06/14/82	FY81 \$283,871      TOTAL \$1,061,949
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Timothy, J G	HQ-SC/Weiler, E J      13-Physics
Lawrence, G M	HQ-SC/Boggess, N W

**NSG 7507**                      **University of Colorado - Boulder**                      **1968**  
X-ray emission, electron acceleration, and related flare problems

<i>Period</i>	<i>Obligations</i>
10/01/78-10/31/81	FY81 \$47,660      TOTAL \$140,830
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Smith, D F	HQ-SC/Chipman, E      13-Physics
Choi, Y	

**NSG 7511**                      **University of Colorado - Boulder**                      **1969**  
Basic research in solar physics      Energy transport in the solar envelope and atmosphere

<i>Period</i>	<i>Obligations</i>
10/01/78-09/30/81	FY81 \$47,000      TOTAL \$152,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Gebbie, K B	HQ-SC/Chipman, E      13-Physics

**NSG 7559**                      **University of Colorado - Boulder**                      **1970**  
Measurement of solar spectral irradiances at wavelengths between 40 and 3100 Angstroms

<i>Period</i>	<i>Obligations</i>
03/01/79-12/31/81	FY81 \$275,359      TOTAL \$597,178
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Barth, C A	HQ-EB/Watson, R T      31-Atmos Sci
Mount, G H	HQ-EB/Chandra, S

**NSG 7584**                      **University of Colorado - Boulder**                      **1971**  
Mechanisms of deformation and failure appropriate to lunar conditions

<i>Period</i>	<i>Obligations</i>
05/01/79-06/30/82	FY81 \$197,310      TOTAL \$272,310
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Spetzler, H A	HQ-SL/Quaide, W L      32-Geological Sci
	HQ-SL/French, B M

**NSG 7626**                      **University of Colorado - Boulder**                      **1972**  
High resolution spectrophotometric observations of interstellar absorption lines

<i>Period</i>	<i>Obligations</i>
08/01/79-07/31/82	FY81 \$38,534      TOTAL \$92,416
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Snow, T P	HQ-SC/Weiler, E J      11-Astronomy
	HQ-SC/Boggess, N W

**NSG 7637**                      **University of Colorado - Boulder**                      **1973**  
Accuracy of gravitational physics tests using ranges to the inner planets

<i>Period</i>	<i>Obligations</i>
08/01/79-01/31/82	FY81      TOTAL \$36,812
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ashby, N	HQ-SC/Weiler, E J      11-Astronomy

**NSG 5394**                      **University of Colorado - Denver**                      **1974**  
International Ultraviolet experiment observations of Mars

<i>Period</i>	<i>Obligations</i>
07/01/79-06/30/82	FY81      TOTAL \$15,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lane, A L	GSFC/Boggess, A      11-Astronomy
Conway, R	

**NAG 1-56**                      **University of Denver**                      **1975**  
Solar extinction radiometry

<i>Period</i>	<i>Obligations</i>
05/15/80-05/14/82	FY81 \$39,970      TOTAL \$79,937
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Goldman, A	LARC/Goad, J H      31-Atmos Sci
Murcray, D G	LARC/McCormick, M P

**NAG 1-57**                      **University of Denver**                      **1976**  
Balloonborne spectrometer measurements of ultraviolet visible solar limb extinction

<i>Period</i>	<i>Obligations</i>
04/01/80-06/30/81	FY81      TOTAL \$26,719
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Murcray, D G	LARC/Goad, J H      31-Atmos Sci
Goldman, A	LARC/McCormick, M P
Williams, W J	

**NASA'S UNIVERSITY PROGRAM**  
**COLORADO (Continued)**

**NAGW 158**                      **University of Denver**                      **1977**  
Wave mechanism in space plasma driven by non-Maxwellian  
distributions  
*Period*                                      *Obligations*  
03/15/81-03/14/82                      FY81 \$29,879                      TOTAL \$29,879  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Patel, V L                      HQ-SC/Mayr, H G                      13-Physics  
   HQ-SC/Wiskerchen, M J

**NAS 1-14929**                      **University of Denver**                      **1978**  
Stratospheric aerosol and gas experiment  
*Period*                                      *Obligations*  
07/18/77-12/30/81                      FY81                      TOTAL \$130,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Murcay, D G                      LARC/McMaster, L R                      31-Atmos Sci  
   LARC/McCormick, M P

**NAS 1-16306**                      **University of Denver**                      **1979**  
Science support for Earth radiation budget satellite/stratospheric  
aerosol and gas experiment  
*Period*                                      *Obligations*  
08/22/80-08/21/85                      FY81 \$12,000                      TOTAL \$38,819  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Murcay, D G                      LARC/McMaster, L R                      31-Atmos Sci  
   LARC/McCormick, M P

**NAS 2-10158**                      **University of Denver**                      **1980**  
Airborne measurements of minor gas constituents of the  
stratosphere  
*Period*                                      *Obligations*  
02/01/79-01/31/82                      FY81                      TOTAL \$564,700  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Murcay, D G                      ARC/Munoz, R M                      31-Atmos Sci  
Goldman, A                      ARC/Margozzi, A P  
Williams, W J

**NAS 5-25862**                      **University of Denver**                      **1981**  
Measurement of X-rays in the mesosphere  
*Period*                                      *Obligations*  
09/19/79-09/30/81                      FY81                      TOTAL \$39,185  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Barcus, J                      GSFC/Goldberg, R                      13-Physics

**NAS 5-26364**                      **University of Denver**                      **1982**  
Stratospheric molecular spectra parameter study  
*Period*                                      *Obligations*  
10/17/80-11/16/82                      FY81 \$19,000                      TOTAL \$19,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Goldman, A                      GSFC/Kunde, V G                      39-Env Sci, NEC

**NAS 5-26627**                      **University of Denver**                      **1983**  
Measurement of X-rays in the mesosphere  
*Period*                                      *Obligations*  
07/02/81-12/01/82                      FY81 \$20,000                      TOTAL \$20,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Barcus, J R                      GSFC/Goldberg, R A                      11-Astronomy

**NAS 9-15991**                      **University of Denver**                      **1984**  
Life sciences shuttle instrumentation development  
*Period*                                      *Obligations*  
11/01/79-01/31/82                      FY81 \$196,713                      TOTAL \$350,478  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Sturm, R E                      JSC/Booher, C R                      59-Life Sci, NEC

**NASW 3113**                      **University of Denver**                      **1985**  
Collection and analysis of information relating to technology  
transfer and application  
*Period*                                      *Obligations*  
02/01/78-01/31/81                      FY81 \$101,935                      TOTAL \$936,406  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Johnson, F D                      HQ-ET/Ault, L A                      99-Multi-Discip

**NASW 3466**                      **University of Denver**                      **1986**  
Transfer research impact studies support of NASA's program  
for transfer research impact studies  
*Period*                                      *Obligations*  
02/01/81-01/31/83                      FY81 \$350,000                      TOTAL \$350,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Johnson, S D                      HQ-ET/Ault, L A                      99-Multi-Discip  
   HQ-ET/Orrick, D W

**NCC 1-48**                      **University of Denver**                      **1987**  
Collaborative study of high resolution infrared atmospheric  
spectra  
*Period*                                      *Obligations*  
12/01/80-11/30/81                      FY81 \$14,995                      TOTAL \$14,995  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Goldman, A                      LARC/Seals, R K , Jr                      31-Atmos Sci

**NSG 1405**                      **University of Denver**                      **1988**  
Theoretical simulations of solar spectra in the middle ultraviolet  
and visible for atmospheric trace constituents measurements  
*Period*                                      *Obligations*  
03/15/77-05/14/80                      FY81                      TOTAL \$114,517  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Goldman, A                      LARC/Goad, J H , Jr                      31-Atmos Sci  
Murcay, D G                      LARC/McCormick, M P

**NSG 1432**                      **University of Denver**                      **1989**  
Collecting, analyzing and archiving of solar spectra from Denver  
and Mt Evans  
*Period*                                      *Obligations*  
07/11/77-11/10/81                      FY81 \$56,942                      TOTAL \$276,808  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Murcay, D G                      LARC/Seals, R K                      39-Env Sci, NEC  
   LARC/Smith, M A

**NSG 5367**                      **University of Denver**                      **1990**  
Velocity fields and spectrum peculiarities in Beta Cephei stars  
*Period*                                      *Obligations*  
06/01/79-11/30/80                      FY81                      TOTAL \$16,100  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lesh, J R                      GSFC/Boggess, A                      11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **COLORADO (Continued)**

**NCC 2-41**                      **University of Southern Colorado**                      **1991**  
Technology research for strapdown inertial experiments

<i>Period</i>	<i>Obligations</i>	
10/01/79-10/31/81	FY81 \$132,741	TOTAL \$240,689
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Carestia, R A	ARC/Hruby, R J	42-Astro Engr

**NAG 3-160**                      **University of Connecticut**                      **1997**  
Elevated temperature biaxial fatigue

<i>Period</i>	<i>Obligations</i>	
02/15/81-02/14/82	FY81 \$60,418	TOTAL \$60,418
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jordan, E H	LERC/Halford, G R	49-Engr, NEC
	LERC/Hirschberg, M H	

**NCC 2-91**                      **University of Southern Colorado**                      **1992**  
Investigation of distributed microcomputer methods for high authority auto flight systems

<i>Period</i>	<i>Obligations</i>	
10/01/80-10/31/81	FY81 \$43,755	TOTAL \$73,755
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dunn, W R	ARC/Meyer, G	49-Engr, NEC

**NASW 3191**                      **University of Connecticut**                      **1998**  
Operation of an industrial applications center

<i>Period</i>	<i>Obligations</i>	
01/01/78-12/31/81	FY81 \$350,000	TOTAL \$1,532,230
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilde, D	HQ-ET/Bivins, R E	99-Multi-Discip

**NSG 9051**                      **University of Southern Colorado**                      **1993**  
Electron microprobe study of lunar and planetary zoned plagioclase feldspars

<i>Period</i>	<i>Obligations</i>	
02/01/77-03/31/82	FY81	TOTAL \$76,529
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, R K	JSC/Lofgren, G	19-Phys Sci, NEC

**NSG 3238**                      **University of Connecticut**                      **1999**  
Turbine endwall two-cylinder program

<i>Period</i>	<i>Obligations</i>	
01/02/79-01/01/82	FY81	TOTAL \$99,410
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Langston, L S	LERC/Goldman, L J	46-Mech Engr

**NSG 5075**                      **University of Connecticut**                      **2000**  
Modelling the terrestrial hydrology of the global atmosphere

<i>Period</i>	<i>Obligations</i>	
08/17/75-10/31/81	FY81	TOTAL \$284,055
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bock, P	GSFC/Halem, M	31-Atmos Sci
Lin, J D		

## **CONNECTICUT**

**NAG 1-153**                      **University of Connecticut**                      **1994**  
An investigation of shape preserving curve and surface approximation with applications

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$29,700	TOTAL \$29,700
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Roulier, J A	LARC/Park, S K	
	LARC/Shoosmith, J N	
	29-Math Computer Sci, NEC	

**NSG 5346**                      **University of Connecticut**                      **2001**  
Hydro-meteorological modeling of soil moisture and interactive moisture transport processes

<i>Period</i>	<i>Obligations</i>	
05/01/79-10/31/81	FY81	TOTAL \$83,355
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lin, J D	GSFC/Halem, M	31-Atmos Sci
Bock, P		

**NAG 2-72**                      **University of Connecticut**                      **1995**  
Stochastic control and identification of helicopter dynamic modes

<i>Period</i>	<i>Obligations</i>	
01/01/81-06/30/82	FY81 \$78,313	TOTAL \$78,313
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bar-shalom, Y	ARC/Warmbrodt, W	41-Aero Engr

**NSG 7450**                      **University of Connecticut**                      **2002**  
Factors affecting assimilatory nitrate reduction by prokaryotes

<i>Period</i>	<i>Obligations</i>	
06/01/78-01/31/82	FY81 \$23,596	TOTAL \$186,482
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Leadbetter, E R	HQ-SB/Devincenzi, D L	51-Biological Sci

**NAG 3-64**                      **University of Connecticut**                      **1996**  
Droplet impact dynamics and heat transfer

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$38,544	TOTAL \$84,486
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bowley, W W	LERC/Olsen, W A	41-Aero Engr
Rivard, E E		

**NAG 5-59**                      **Wesleyan University**                      **2003**  
Distribution and kinematics of interstellar gas

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/81	FY81	TOTAL \$3,312
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Herbst, W	GSFC/Gull, T R	11-Astronomy

# NASA'S UNIVERSITY PROGRAM CONNECTICUT (Continued)

**NAG 8-335** Wesleyan University **2004**  
Optical and infrared studies of stars in reflection nebulae  
*Period* *Obligations*  
01/15/80-09/30/81 FY81 \$3,236 TOTAL \$16,943  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Herbst, W MSFC/Odell, C R 11-Astronomy

**NAG 1-37** Yale University **2005**  
Rotational coherent anti-Stokes Raman spectroscopy (CARS) application  
*Period* *Obligations*  
03/01/80-02/28/82 FY81 \$60,000 TOTAL \$120,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Chang, R K LARC/Hoppe, J C 13-Physics  
LARC/Hunter, W W

**NAG 2-15** Yale University **2006**  
Experimental and theoretical study of heteromolecular nucleation of vapors occurring in the atmosphere  
*Period* *Obligations*  
01/01/80-12/31/81 FY81 \$55,000 TOTAL \$114,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wegner, P P ARC/Toon, O B 31-Atmos Sci

**NAG 3-201** Yale University **2007**  
Theory of mass transfer from combustion gases  
*Period* *Obligations*  
09/01/81-08/31/82 FY81 \$50,000 TOTAL \$50,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rosner, D E LERC/Kohl, F J 43-Chem Engr  
LERC/Benford, S M

**NAG 5-188** Yale University **2008**  
Ultraviolet energy distribution of selected galaxies  
*Period* *Obligations*  
06/15/81-06/14/82 FY81 \$2,829 TOTAL \$2,829  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Oemler, A, Jr GSFC/Boggess, A 11-Astronomy  
Gunn, J E

**NAGW 175** Yale University **2009**  
Early differentiation of the Moon Experimental modeling studies  
*Period* *Obligations*  
02/01/81-01/30/82 FY81 \$59,384 TOTAL \$59,384  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Longhi, J HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/French, B M

**NAS 8-33572** Yale University **2010**  
Experimental test for violations of the equivalence principle by weak interactions  
*Period* *Obligations*  
09/05/79-09/04/81 FY81: TOTAL \$7,849  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Parker, P D MSFC/Eby, P 11-Astronomy  
MSFC/Decher, R

**NAS 8-34383** Yale University **2011**  
Containerless high temperature property measurements by atomic fluorescence  
*Period* *Obligations*  
06/10/81-06/09/84 FY81 \$123,000 TOTAL \$123,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Nordine, P C MSFC/Fallon, R A 19-Phys Sci, NEC  
MSFC/Ethridge, E S

**NASW 3430** Yale University **2012**  
Conduct a conference entitled 'The space age How do you like it so far?'  
*Period* *Obligations*  
09/25/80-02/28/81 FY81 TOTAL \$18,445  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Theodore, E HQ-LH/Roland, A 73-History  
HQ-LH/Wright, M D

**NGL 07-004-005** Yale University **2013**  
Low-power, low-speed data storage and processing equipment  
*Period* *Obligations*  
01/01/71-02/28/82 FY81 TOTAL \$896,619  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Barker, R C GSFC/Schaefer, D 45-Elec Engr

**NSG 2185** Yale University **2014**  
Early detection of acute respiratory infections  
*Period* *Obligations*  
10/01/76-11/30/81 FY81 \$55,000 TOTAL \$195,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Evans, A S ARC/Mandel, A D 56-Medical Sciences  
Niederman, J C

**NSG 3107** Yale University **2015**  
Deposition of condensible impurities on surfaces immersed in hot gases  
*Period* *Obligations*  
07/15/76-11/15/81 FY81 TOTAL \$157,140  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rosner, D E LERC/Kohl, F J 47-Materials Engr  
LERC/Stearns, C A

**NSG 3169** Yale University **2016**  
Experimentation studies of the deposition of sodium sulfate in/from combustion gases  
*Period* *Obligations*  
11/15/77-11/13/81 FY81 \$65,000 TOTAL \$214,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rosner, D E LERC/Kohl, F J 12-Chemistry  
LERC/Stearns, C A

**NSG 7290** Yale University **2017**  
Membranes and circadian rhythms in plants  
*Period* *Obligations*  
10/01/76-10/31/81 FY81 \$60,000 TOTAL \$249,420  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Galston, A W HQ-SB/Halstead, T W 51-Biological Sci

# NASA'S UNIVERSITY PROGRAM DELAWARE

## DELAWARE

**NAG 3-121** **University of Delaware** **2018**  
Inlet flow distortion in turbo machinery  
*Period* *Obligations*  
10/27/80-04/26/82 **FY81 \$33,878** **TOTAL \$33,878**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Seidel, B S LERC/Farrell, C A 41-Aero Engr  
LERC/Adamczyk, J J

**NAG 5-107** **University of Delaware** **2019**  
Research relative to a climatically-derived global soil moisture data set  
*Period* *Obligations*  
09/15/80-11/14/81 **FY81** **TOTAL \$73,233**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Willmott, C J GSFC/Shukla, J 31-Atmos Sci

**NAG 8-390** **University of Delaware** **2020**  
Spectra of white dwarf X-ray sources  
*Period* *Obligations*  
12/04/80-12/03/81 **FY81 \$5,985** **TOTAL \$5,985**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Shipman, H L MSFC/Stone, J F 11-Astronomy

**NAS 5-26254** **University of Delaware** **2021**  
University of Delaware LANDSAT applications technical assistance services  
*Period* *Obligations*  
08/21/80-11/20/81 **FY81 \$7,040** **TOTAL \$21,061**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Klemas, V GSFC/Gervin, J C 39-Env Sci, NEC  
GSFC/Witt, R G

**NAS 5-26273** **University of Delaware** **2022**  
Investigation of the stability of naturally occurring glasses  
*Period* *Obligations*  
09/01/80-03/27/82 **FY81** **TOTAL \$24,344**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Glass, W P GSFC/Alterescu, S 43-Chem Engr

**NGT 08-001-800** **University of Delaware** **2023**  
Graduate student researchers program  
*Period* *Obligations*  
09/01/81-08/31/82 **FY81 \$11,000** **TOTAL \$11,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wu, J HQ-LC/Carter, C H 39-Env Sci, NEC

**NSG 1304** **University of Delaware** **2024**  
Damage repair technology in composite materials  
*Period* *Obligations*  
05/01/76-04/30/82 **FY81 \$69,297** **TOTAL \$360,953**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Pipes, R B LARC/Deaton, J W 46-Mech Engr  
Wilson, D W LARC/Dow, M B

**NSG 3184** **University of Delaware** **2025**  
Heat storage in alloy transformation  
*Period* *Obligations*  
07/01/78-12/30/80 **FY81** **TOTAL \$173,980**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Birchenall, C E LERC/Vernon, R W 47-Materials Engr

## DISTRICT OF COLUMBIA

**NAG 3-94** **The Catholic University of America** **2026**  
Rapid determination of aviation fuel freezing points  
*Period* *Obligations*  
10/01/80-01/31/82 **FY81** **TOTAL \$47,735**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Moynihan, C T LERC/Friedman, R 43-Chem Engr

**NAS 5-26226** **The Catholic University of America** **2027**  
Development of instrumentation for measurement of scattering from mirrors and black surfaces  
*Period* *Obligations*  
06/30/80-11/30/81 **FY81** **TOTAL \$20,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lally, J F GSFC/Heaney, J B 45-Elec Engr  
Meister, R

**NGR 09-005-063** **The Catholic University of America** **2028**  
Interaction of the solar wind with the Moon  
*Period* *Obligations*  
04/15/69-10/31/81 **FY81** **TOTAL \$304,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Whang, Y C HQ-SC/Schmerling, E R 13-Physics

**NGT 09-005-800** **The Catholic University of America** **2029**  
Graduate student researchers program  
*Period* *Obligations*  
09/01/80-08/30/82 **FY81 \$10,650** **TOTAL \$18,480**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Werntz, C W HQ-LC/Carter, C H 13-Physics

**NSG 5066** **The Catholic University of America** **2030**  
Research of solar hard X-rays and gamma-rays  
*Period* *Obligations*  
05/01/75-12/31/81 **FY81 \$49,034** **TOTAL \$152,785**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Werntz, C GSFC/Trombka, J I 13-Physics

**NSG 5111** **The Catholic University of America** **2031**  
Research of properties of material in the submillimeter wave region  
*Period* *Obligations*  
09/01/76-08/31/81 **FY81** **TOTAL \$70,647**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kelley, G L GSFC/McAvoy, N 13-Physics  
Meister, R

**NASA'S UNIVERSITY PROGRAM**  
**DISTRICT OF COLUMBIA (Continued)**

**NSG 5173**                      **The Catholic University of America**                      **2032**  
Atom-molecule reactions of chemical importance in the strato-  
sphere  
*Period*    *Obligations*  
06/01/77-11/30/82                      FY81 \$56,943                      TOTAL \$226,680  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Hunt, J B                      GSFC/Nava, D F                      12-Chemistry  
Michael, J V

**NSG 7422**                      **The Catholic University of America**                      **2033**  
Expansion of the solar wind from coronal holes  
*Period*    *Obligations*  
04/01/78-03/31/82                      FY81 \$86,016                      TOTAL \$210,016  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Whang, Y C                      HQ-SC/Chipman, E                      13-Physics

**NAG 1-13**                      **George Washington University**                      **2034**  
Program of research in helicopter aerodynamic theory  
*Period*    *Obligations*  
12/01/79-11/30/81                      FY81 \$28,298                      TOTAL \$54,019  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Liebowitz, H                      LARC/Demarais, R N                      41-Aero Engr  
Runyan, H L                      LARC/Reed, W H

**NAG 1-136**                      **George Washington University**                      **2035**  
Program of research in high-speed aerodynamics in the Joint  
Institute for Advancement of Flight Sciences  
*Period*    *Obligations*  
12/09/80-12/08/81                      FY81 \$37,758                      TOTAL \$37,758  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Liebowitz, H                      LARC/Harris, R V                      41-Aero Engr

**NAG 1-158**                      **George Washington University**                      **2036**  
Effects of low velocity impact on strength characteristics of  
composite materials laminates  
*Period*    *Obligations*  
03/01/81-02/28/82                      FY81 \$81,729                      TOTAL \$81,729  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Liebowitz, H                      LARC/Roderick, G L                      47-Materials Engr  
Lee, J D                      LARC/Ilig, W

**NAG 1-179**                      **George Washington University**                      **2037**  
Software reliability models for fault-tolerant avionics computers  
and related topics  
*Period*    *Obligations*  
07/01/81-06/30/82                      FY81 \$99,905                      TOTAL \$99,905  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Miller, D R                      LARC/Migneault, G E                      29-Math Computer Sci, NEC  
LARC/Finelli, G B

**NAG 1-185**                      **George Washington University**                      **2038**  
Raster graphics extension to the CORE system  
*Period*    *Obligations*  
05/01/81-04/30/82                      FY81 \$42,556                      TOTAL \$42,556  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Foley, J D                      LARC/Speray, D E                      22-Computer Science  
LARC/Shoosmith, J W

**NAG 1-199**                      **George Washington University**                      **2039**  
Research program in active control/aeroelasticity  
*Period*    *Obligations*  
08/01/81-07/31/82                      FY81 \$45,696                      TOTAL \$45,696  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Liebowitz, H                      LARC/Abel, I                      41-Aero Engr

**NAG 2-40**                      **George Washington University**                      **2040**  
Transonic airfoil-design by optimization methods in the Joint  
Institute for Advancement of Flight Sciences at NASA/Langley  
Research Center  
*Period*    *Obligations*  
06/01/80-05/31/82                      FY81                      TOTAL \$15,455  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Hafez, M M                      ARC/Chapman, G T                      41-Aero Engr  
ARC/Hicks, R M

**NAG 5-83**                      **George Washington University**                      **2041**  
Application of discrete random media techniques for active and  
passive modeling of subsurface media  
*Period*    *Obligations*  
07/01/80-06/30/82                      FY81 \$40,000                      TOTAL \$65,003  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Lang, R H                      GSFC/Meneghini, R                      45-Elec Engr

**NAG 1-14605**                      **George Washington University**                      **2042**  
Experimental and analytical engineering and applied science  
support of Langley Research Center programs  
*Period*    *Obligations*  
09/02/76-09/01/81                      FY81 \$18,127                      TOTAL \$222,008  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Liebowitz, H                      LARC/Duberg, J E                      41-Aero Engr  
Whitesides, J L                      LARC/Erickson, W D

**NAG 9-16461**                      **George Washington University**                      **2043**  
Assessing space station studies as related to national needs  
*Period*    *Obligations*  
09/24/81-03/24/82                      FY81 \$18,276                      TOTAL \$18,276  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Logsdon, J                      JSC/Wolfer, B                      49-Engr, NEC

**NASW 3165**                      **George Washington University**                      **2044**  
Scientific communication in planetary biology and bioscience  
*Period*    *Obligations*  
04/17/78-06/30/82                      FY81 \$302,778                      TOTAL \$453,755  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Waters, E, Jr                      HQ-SB/Halstead, T W                      59-Life Sci, NEC  
HQ-SB/Geib, D S



NCC 1-14		George Washington University		2045
Aeroacoustics research program in Joint Institute for Advancement of Flight Sciences (JIAFS)				
<i>Period</i>		<i>Obligations</i>		
05/15/79-01/31/82		FY81	\$129,601	TOTAL \$306,071
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Liebowitz, H	LARC/Chestnut, D		41-Aero Engr	

<b>NCC 1-47</b>	<b>George Washington University</b>	<b>2052</b>
<b>A core program in the Joint Institute for Advancement of Flight Sciences at the NASA Langley Research Center</b>		
<i>Period</i>	<i>Obligations</i>	
11/04/80-11/03/81	FY81 \$249,705	TOTAL \$249,705
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Liebowitz, H	LARC/Hohl, F	41-Aero Engr
	LARC/Anderson, A F	

<b>NCC 1-19</b>	<b>George Washington University</b>	<b>2046</b>
A research program in atmospheric science		
<i>Period</i>		<i>Obligations</i>
07/01/79-05/31/82	FY81	TOTAL \$167,755
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Liebowitz, H	LARC/Callis, L B	31-Atmos Sci
	LARC/Tolson, R H	

NGR 09-010-078		George Washington University		2053	
Research programs in structures and dynamics					
Period		Obligations			
01/06/72-12/31/81		FY81	\$155,000	TOTAL	\$1,644,657
Prin Invest		NASA Tech Officer		CASE Category	
Liebowitz, H		LARC/McComb, H G		41-Aero Engr	

<b>NCC 1-24</b>	<b>George Washington University</b>	<b>2047</b>
Programs of research in flight sciences		
<i>Period</i>	<i>Obligations</i>	
08/15/79-01/31/82	FY81 \$182,161	TOTAL \$373,483
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Liebowitz, H	LARC/Foughner, J T, Jr	41-Aero Engr
Whitesides, J L		

NGR 09-010-085		George Washington University	2054
Aircraft noise reduction research			
Period	Obligations		
02/21/73-06/30/82	FY81	TOTAL	\$690,128
Prin Invest	NASA Tech Officer	CASE Category	
Liebowitz, H	LARC/Morgan, H G	41-Aero Engr	

NCC 1-29		George Washington University		2048	
Research program in flight dynamics in the Joint Institute for Advancement of Flight Sciences (JIAFS) at the NASA Langley Research Center					
Period		Obligations			
12/01/79-11/30/81		FY81	\$126,843	TOTAL	\$188,673
Prin Invest	NASA Tech Officer		CASE Category		
Liebowitz, H	LARC/Sunt, W T		41-Aero Engr		
	LARC/Lallman, F J				

NGR 09-010-096	George Washington University	2055
Research program in microwave remote sensing		
<i>Period</i>	<i>Obligations</i>	
09/01/73-11/30/81	FY81	TOTAL \$174,639
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Liebowitz, H	LARC/Croswell, W F	45-Elec Engr
	LARC/Schrader, J H	

NCC 1-36		George Washington University		2049	
Research program in materials science					
Period		Obligations			
06/01/80-12/31/81		FY81	\$141,658	TOTAL	\$315,219
Prin Invest		NASA Tech Officer		CASE Category	
Liebowitz, H		LARC/Swann, R T		47-Materials Engr	
Esterling, D M					

NGT 09-010-800		George Washington University	2056
Graduate student researchers program			
<i>Period</i>		<i>Obligations</i>	
05/03/81-05/02/82	FY81	\$10,533	TOTAL \$10,533
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Silverman, B G	HQ-LC/ Carter, C H		49-Engr, NEC

<b>NCC 1-39</b>	<b>George Washington University</b>	<b>2050</b>
<b>Program of research in environmental modeling</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/80-06/30/82</b>	<b>FY81 \$45,984</b>	<b>TOTAL \$110,984</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Liebowitz, H</b>	<b>LARC/Callis, L B</b>	<b>31-Atmos Sci</b>
	<b>LARC/Tolson, R H</b>	

NSG 1110	George Washington University		2057
Antenna and wave propagation applied to avionics systems			
Period	Obligations		
10/01/74-05/31/82	FY81 \$12,317	TOTAL	\$171,511
Prin Invest	NASA Tech Officer		CASE Category
Liebowitz, H	LARC/Bailey, M C		45-Elec Engr

NCC 1-44		George Washington University	2051
Research program in aeronautics			
<i>Period</i>		<i>Obligations</i>	
08/01/80-07/31/83	FY81	\$111,687	TOTAL \$255,212
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Liebowitz, H L	LARC/Prior, E J		41-Aero Engr
Whitesides, J L	LARC/Hohl, F		

NSG 1555	George Washington University	2058
Studies of radiative transfer in the Earth's atmosphere with emphasis on the inference of the radiation budget		
Period	Obligations	
08/01/78-07/31/82	FY81	TOTAL \$64,931
Prin Invest	NASA Tech Officer	CASE Category
Liebowitz, H	LARC/Smith, G L	31-Atmos Sci
Barkstrom, B R	LARC/Suttles, J T	

NSG 1585		George Washington University		2059	
Research program in laminar flow control					
Period		Obligations			
11/15/78-11/14/81		FY81	\$74,144	TOTAL	\$207,782
Pnn Invest	NASA Tech Officer		CASE Category		
Liebowitz, H	LARC/Harvey, W	D	41-Aero Engr		
	LARC/Wagner, R	D			

NASW 3397		Georgetown University		2061	
Guide for the teaching and student research of the applications of shuttle derived space utilization technologies					
Period		Obligations			
06/11/80-12/12/81		FY81		TOTAL \$29,996	
Prin Invest		NASA Tech Officer		CASE Category	
Cheston, T S		HQ-LF/Tuttle, F B		79-Soc Sci, NEC	
		HO-MT/Puttkamer, J V			

<b>NAG 2-78</b>	<b>Howard University</b>	<b>2063</b>
<b>Far infrared observations of extragalactic molecular clouds</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/80-09/30/82	FY81 \$9,659	<b>TOTAL \$9,659</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Richard, L. J	ARC/Haughney, L. C	11-Astronomy

NAG 5-25		Howard University		2065
Dynamic characteristics of linear hydrostatic gas bearings				
<i>Period</i>		<i>Obligations</i>		
04/01/80-03/31/82		FY81	\$35,000	TOTAL \$70,000
<i>Pnn Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Watkins, C B		GSFC/Cygnarowicz, T A	46-Mech Engr	
Eronini, I E		GSFC/Sherman, A		

NAG 5-79		Howard University		2067	
Research relative to optical constants and properties of material in the extreme ultraviolet					
Period		Obligations			
06/15/80-08/31/82		FY81	\$18,893	TOTAL	\$66,248
Prin Invest	NASA Tech Officer	CASE Category			
Catchings, R M	GSFC/Osantowski, J F	13-Physics			
	GSFC/Mangus, J D				

<b>NAG 5-156</b>	<b>Howard University</b>	<b>2068</b>
<b>Real-type observations of X-ray diffraction patterns</b>		
<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$30,000	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tsang, T	GSFC/Yin, L I	13-Physics

NAG 5-180		Howard University	2069
Development of short gate microwave devices			
<i>Period</i>	<i>Obligations</i>		
05/15/81-05/14/82	FY81	\$90,000	TOTAL \$90,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Harris, G L	GSFC/Alcorn, G E		45-Elec Engr
Spencer, M	GSFC/Jackson, J W		

<b>NAG 5-204</b>	<b>Howard University</b>	<b>2070</b>
Investigation of mechanisms by which laser dye lifetimes may be extended		
<i>Period</i>	<i>Obligations</i>	
08/15/81-08/14/82	FY81 \$48,195	TOTAL \$48,195
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nicholson, J M	GSFC/Dickens, P L	12-Chemistry
	GSFC/Caudill, L O	

NAG 8-371	Howard University	2071
X-ray observations of runaway stars		
<i>Period</i>	<i>Obligations</i>	
08/15/80-11/15/81	FY81	TOTAL \$6,438
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Categor</i>
Kumar, C K	MSFC/Stone, J F	11-Astronomy

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**NASA'S UNIVERSITY PROGRAM  
DISTRICT OF COLUMBIA (Continued)**

<b>NAG10-2</b>	<b>Howard University</b>	<b>2073</b>	
Feasibility study of using field effect transistor to measure electrical field strength			
<i>Period</i>	<i>Obligations</i>		
05/15/80-05/14/81	FY81	TOTAL \$39,815	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Wang, Y C	KSC/Riser, W T	59-Life Sci, NEC	
<b>NAS 5-23799</b>	<b>Howard University</b>	<b>2074</b>	
Quality assurance system in clinical practice settings			
<i>Period</i>	<i>Obligations</i>		
12/07/76-05/30/82	FY81	TOTAL \$142,791	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Chang, P	GSFC/Alterescu, S	56-Medical Sciences	
<b>NAS 5-24242</b>	<b>Howard University</b>	<b>2075</b>	
Study of aerodynamics for sounding rockets			
<i>Period</i>	<i>Obligations</i>		
07/01/77-03/01/82	FY81 \$44,684	TOTAL \$162,561	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Fan, D	GSFC/Barrowman, J S	41-Aero Engr	
	GSFC/Mayo, E E		
<b>NAS 5-24251</b>	<b>Howard University</b>	<b>2076</b>	
Study of flexible body interaction			
<i>Period</i>	<i>Obligations</i>		
08/08/77-12/08/80	FY81	TOTAL \$19,980	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Choudhury, A K	GSFC/Hui, P S	49-Engr, NEC	
<b>NAS 5-25185</b>	<b>Howard University</b>	<b>2077</b>	
Study of tektites and other space related glasses			
<i>Period</i>	<i>Obligations</i>		
08/17/78-01/05/82	FY81	TOTAL \$110,000	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Thorpe, A M	GSFC/Okeefe, J A	39-Env Sci, NEC	
	GSFC/Alterescu, S		
<b>NAS 5-26019</b>	<b>Howard University</b>	<b>2078</b>	
Microwave circuit design			
<i>Period</i>	<i>Obligations</i>		
02/01/80-02/01/81	FY81	TOTAL \$63,321	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Chowdhary, R	GSFC/Santarpia, D E	45-Elec Engr	
	GSFC/Chrissotimos, N G		
<b>NAS 5-26531</b>	<b>Howard University</b>	<b>2079</b>	
Microwave circuit design			
<i>Period</i>	<i>Obligations</i>		
04/15/81-04/14/82	FY81 \$73,949	TOTAL \$73,949	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Chowdhary, R	GSFC/Santarpia, D E	45-Elec Engr	
	GSFC/Jackson, J W		
<b>NCA 5-29</b>	<b>Howard University</b>	<b>2080</b>	
Goddard introduction to engineering careers			
<i>Period</i>	<i>Obligations</i>		
06/01/78-06/31/82	FY81	TOTAL \$45,620	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Cox, E L	GSFC/Mundy, J R	49-Engr, NEC	
	GSFC/Chapman, J W		
<b>NCA 5-91</b>	<b>Howard University</b>	<b>2081</b>	
Prefreshmen and cooperative education program			
<i>Period</i>	<i>Obligations</i>		
06/01/78-06/30/81	FY81	TOTAL \$75,000	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Cox, E L	GSFC/Chapman, J W	49-Engr, NEC	
<b>NGR 09-011-057</b>	<b>Howard University</b>	<b>2082</b>	
Electron spectroscopy			
<i>Period</i>	<i>Obligations</i>		
04/01/74-07/31/81	FY81	TOTAL \$37,840	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Tsang, T	GSFC/Yin, L I	13-Physics	
<b>NGT 09-011-060</b>	<b>Howard University</b>	<b>2083</b>	
Summer faculty fellowship program in research			
<i>Period</i>	<i>Obligations</i>		
01/01/78-03/31/81	FY81	TOTAL \$329,605	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Fan, D N	HQ-LC/Carter, C H	99-Multi-Discip	
<b>NGT 09-011-080</b>	<b>Howard University</b>	<b>2084</b>	
Graduate assistant program in science and engineering			
<i>Period</i>	<i>Obligations</i>		
09/15/80-09/14/81	FY81	TOTAL \$54,000	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Gill, T L	GSFC/Mundy, J R	49-Engr, NEC	
	HQ-LC/Pohly, J G		
<b>NGT 09-011-800</b>	<b>Howard University</b>	<b>2085</b>	
Graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
08/03/81-08/02/82	FY81 \$8,000	TOTAL \$8,000	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Jackson, W	HQ-LC/Carter, C H	11-Astronomy	
<b>NGT 09-011-801</b>	<b>Howard University</b>	<b>2086</b>	
Graduate student researchers program			
<i>Period</i>	<i>Obligations</i>		
08/19/81-08/18/82	FY81 \$8,000	TOTAL \$8,000	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Deloatch, E M	HQ-LC/Carter, C H	45-Elec Engr	

**NASA'S UNIVERSITY PROGRAM  
DISTRICT OF COLUMBIA (Continued)**

**NSG 1320**                      **Howard University**                      **2087**  
Graduate research program in advanced aerospace structures  
*Period*                                      *Obligations*  
06/29/76-08/31/81                      FY81                      TOTAL \$161,720  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Jones, I W                      LARC/Walz, J                      42-Astro Engr  
LARC/Anderson, M

**NSG 1414**                      **Howard University**                      **2088**  
The dynamics and control of large flexible space structures  
*Period*                                      *Obligations*  
05/16/77-05/15/82                      FY81 \$74,702                      TOTAL \$285,656  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bainum, P M                      LARC/Hammer, H A                      49-Engr, NEC  
Kumar, V K  
Reddy, A S

**NSG 5071**                      **Howard University**                      **2089**  
Laser induced photoluminescence studies of primary photochemical  
production processes of cometary radicals  
*Period*                                      *Obligations*  
08/01/75-03/31/82                      FY81 \$115,000                      TOTAL \$361,625  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Jackson, W M                      HQ-SL/Murphy, R E                      12-Chemistry  
HQ-SL/Brunk, W E

**NSG 5158**                      **Howard University**                      **2090**  
Research of microwave semiconductor devices  
*Period*                                      *Obligations*  
02/01/77-06/14/82                      FY81 \$160,000                      TOTAL \$769,800  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Harris, G L                      GSFC/Alcorn, G E                      13-Physics  
Spencer, M  
Chowdhary, R

**NSG 5268**                      **Howard University**                      **2091**  
Characterization of low intensity X-ray imaging devices  
*Period*                                      *Obligations*  
04/15/78-12/31/81                      FY81                      TOTAL \$76,900  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Ferguson, G A                      GSFC/Yin, L I                      56-Medical Sciences

**NSG 5336**                      **Howard University**                      **2092**  
Low cost terminals using remotely generated cross-correlation  
references  
*Period*                                      *Obligations*  
02/01/79-07/31/80                      FY81                      TOTAL \$57,606  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Sennott, J W                      GSFC/Taylor, R E                      45-Elec Engr  
Choudhury, A K

**NAG 5-75**                      **University of District of Columbia**                      **2093**  
Research on the causes of the temporal changes in the Earth's  
albedo  
*Period*                                      *Obligations*  
06/01/80-08/31/81                      FY81                      TOTAL \$32,138  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dhuria, H                      GSFC/Curran, R J                      31-Atmos Sci  
GSFC/King, M D

**NAG 5-91**                      **University of District of Columbia**                      **2094**  
Data management and language enhancement for generalized set  
theory computer  
*Period*                                      *Obligations*  
08/01/80-11/15/81                      FY81                      TOTAL \$48,686  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Finley, G T                      GSFC/Purves, L R                      22-Computer Science

**NGR 09-050-019**                      **University of District of Columbia**                      **2095**  
Determination of heavy metals in sediments and benthic species  
in relation to nuclear power plant operation  
*Period*                                      *Obligations*  
02/18/74-04/30/82                      FY81 \$36,227                      TOTAL \$226,776  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Phelps, H L                      GSFC/Gross, F C                      39-Env Sci, NEC  
GSFC/Colony, J A

**NGR 09-053-003**                      **University of District of Columbia**                      **2096**  
Investigation of problems associated with solid encapsulation of  
high voltage electronic assemblies  
*Period*                                      *Obligations*  
04/15/74-11/30/81                      FY81                      TOTAL \$229,525  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lessin, I                      GSFC/Ruitberg, A P                      39-Env Sci, NEC

**NSG 5122**                      **University of District of Columbia**                      **2097**  
Research in orbit determination by method of least squares and  
Kalman filter  
*Period*                                      *Obligations*  
08/01/76-08/31/81                      FY81                      TOTAL \$43,805  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bakshi, J S                      GSFC/Lefferts, E                      21-Mathematics

**NSG 5192**                      **University of District of Columbia**                      **2098**  
Excitation cross section measurements of atmospheric interest  
*Period*                                      *Obligations*  
08/01/77-11/30/81                      FY81                      TOTAL \$211,842  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Morgan, H D                      GSFC/Mentall, J E                      13-Physics

**NSG 5290**                      **University of District of Columbia**                      **2099**  
Measurement of bi-directional reflected spectra and correlation  
to agronomic parameters  
*Period*                                      *Obligations*  
08/01/78-01/31/81                      FY81                      TOTAL \$70,517  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wattington, R A                      GSFC/Chappelle, E W                      19-Phys Sci, NEC

# NASA'S UNIVERSITY PROGRAM FLORIDA

## FLORIDA

**NAS 6-3040**      **Embry-Riddle Aeronautical University**      **2100**  
Study for the evaluation of in-flight instrument flight rules  
procedures trainer  
*Period*      *Obligations*  
10/01/79-09/30/80      **FY81**      **TOTAL \$23,560**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Gandelman, J      WFC/Aaron, J B      41-Aero Engr  
WFC/Parker, L C

**NAG 2-81**      **Florida A&M University**      **2101**  
Relationship of angiotension rhythms in plasma and CNS to  
neurogenic hypertension  
*Period*      *Obligations*  
01/01/81-12/31/81      **FY81 \$25,000**      **TOTAL \$25,000**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Holder, M S      ARC/Winget, C M      51-Biological Sci

**NAS 5-25165**      **Florida A&M University**      **2102**  
Medical application for computer technology  
*Period*      *Obligations*  
08/15/78-10/17/81      **FY81**      **TOTAL \$97,317**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Fresh, F A      GSFC/Alterescu, S      56-Medical Sciences

**NSG 2029**      **Florida A&M University**      **2103**  
Study of influence of amines on diurnal toxicity of stimulants  
and depressants  
*Period*      *Obligations*  
07/01/74-11/30/81      **FY81 \$60,000**      **TOTAL \$348,058**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Walker, C A      ARC/Winget, C M      59-Life Sci, NEC

**NSG 2183**      **Florida A&M University**      **2104**  
Regulation of the adrenal cortex function during stress  
*Period*      *Obligations*  
09/01/76-12/31/81      **FY81 \$40,000**      **TOTAL \$188,952**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Soliman, K F      ARC/Winget, C M      59-Life Sci, NEC

**NSG 5307**      **Florida A&M University**      **2105**  
Electron-impact excitation of molecular nitrogen  
*Period*      *Obligations*  
11/15/78-11/14/81      **FY81**      **TOTAL \$177,075**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Jones, H W      GSFC/Temkin, A      13-Physics  
Weatherford, C A  
Jain, B L

**NAS10-10106**      **Florida Institute of Technology**      **2106**  
Improved hypergolic vapor removal systems study resulting in  
preliminary design  
*Period*      *Obligations*  
04/24/81-04/24/82      **FY81 \$62,695**      **TOTAL \$62,695**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Thomas, J J      KSC/Howard, F S      12-Chemistry  
Banle, R

**NAS10-10225**      **Florida Institute of Technology**      **2107**  
A study to determine the technical specifications for an advanced  
wildlife tracking system  
*Period*      *Obligations*  
09/02/81-11/02/81      **FY81 \$7,943**      **TOTAL \$7,943**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Nunn,, W M , Jr      KSC/Huffman, W O      59-Life Sci, NEC

**NAG 3-182**      **Florida State University**      **2108**  
Shock associated noise of supersonic jets from  
*Period*      *Obligations*  
08/01/81-07/31/82      **FY81 \$50,181**      **TOTAL \$50,181**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Tam, C K      LERC/Stone, J R      41-Aero Engr

**NAG 5-6**      **Florida State University**      **2109**  
Investigation of microwave radiometer data in global numerical  
weather prediction  
*Period*      *Obligations*  
02/01/80-05/31/82      **FY81 \$65,876**      **TOTAL \$128,966**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Krishnamurti, T N      GSFC/Susskind, J      31-Atmos Sci

**NAGW 221**      **Florida State University**      **2110**  
Some aspects of southern oscillation dynamics  
*Period*      *Obligations*  
09/01/81-08/31/82      **FY81 \$20,944**      **TOTAL \$20,944**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Clark, A J      HQ-EB/Chase, R P      33-Oceanography  
HQ-EB/Wilson, W S

**NASW 3522**      **Florida State University**      **2111**  
Construction of a 0.0025 cm-1 resolution Fourier transform  
spectrometer  
*Period*      *Obligations*  
02/01/81-07/01/83      **FY81 \$50,000**      **TOTAL \$50,000**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Hunt, R H      HQ-EB/Watson, R T      31-Atmos Sci  
Shelton, W N      HQ-EB/Chan, K R

**NGR 10-004-056**      **Florida State University**      **2112**  
Infrared absorption from 0.8 to 1.5 microns of NH3, CH4 and  
CO2  
*Period*      *Obligations*  
03/25/69-01/31/82      **FY81 \$18,346**      **TOTAL \$318,309**  
*Prnn Invest*      *NASA Tech Officer*      *CASE Category*  
Hunt, R H      HQ-SL/Brunck, W E      11-Astronomy  
HQ-SL/Murphy, R E

**NASA'S UNIVERSITY PROGRAM**  
**FLORIDA (Continued)**

**NGT 10-004-800**      **Florida State University**      **2113**  
Graduate student training program in oceanographic remote sensing  
*Period*      *Obligations*  
06/01/81-05/31/82      FY81 \$49,000      TOTAL \$49,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
O'Brien, J J      HQ-EB/Chase, R P      33-Oceanography  
MacH, W H      HQ-EB/Wilson, W S

**NSG 7337**      **Florida State University**      **2114**  
Rock-inhabiting microorganisms from hot and cold deserts  
Adaptations to extreme environments  
*Period*      *Obligations*  
03/15/77-03/14/82      FY81 \$91,800      TOTAL \$381,760  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Friedmann, E I      HQ-SB/Devincenzi, D L  
Friedmann, R O      54-Env Biology

**NSG 7473**      **Florida State University**      **2115**  
Laboratory determination of infrared absorption line parameters for molecules of importance in upper atmospheric research  
*Period*      *Obligations*  
07/01/78-06/30/82      FY81 \$36,000      TOTAL \$141,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hunt, R H      HQ-EB/Watson, R T      31-Atmos Sci  
HQ-EB/Chan, K R

**NSG 7629**      **Florida State University**      **2116**  
Meteorology studies of Mars  
*Period*      *Obligations*  
03/01/79-10/30/81      FY81 \$27,921      TOTAL \$111,921  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hess, S L      HQ-SL/Murphy, R E      31-Atmos Sci  
HQ-SL/Brunk, W E

**NAS 5-26714**      **Nova University**      **2117**  
Administrative support for satellite surface stress working group  
*Period*      *Obligations*  
09/18/81-10/01/82      FY81 \$42,000      TOTAL \$42,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Witte, J M      GSFC/Kirk, R G      33-Oceanography

**NASW 3060**      **State University System of Florida**      **2118**  
Operation of a state technology application center  
*Period*      *Obligations*  
01/01/77-02/29/80      FY81      TOTAL \$379,941  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Unavailable      HQ-ET/Dolby, W      99-Multi-Discip

**NASW 3351**      **State University System of Florida**      **2119**  
Operation of a state technology applications center (STAC)  
*Period*      *Obligations*  
03/01/80-06/30/82      FY81: \$157,000      TOTAL \$423,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Unavailable      HQ-ET/Harrison, J      22-Computer Science

**NAS 8-32835**      **The University of Central Florida**      **2120**  
Boundary integral fracture mechanics code  
*Period*      *Obligations*  
02/27/78-09/30/81      FY81      TOTAL \$24,515  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Carroll, W E      MSFC/Bianca, C      47-Materials Engr  
MSFC/Frederick, P W

**NAS 8-33071**      **The University of Central Florida**      **2121**  
Study of cloud cover modeling  
*Period*      *Obligations*  
05/30/78-09/30/79      FY81      TOTAL \$20,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Somerville, P N      MSFC/Smith, O E      31-Atmos Sci  
MSFC/Brown, S C

**NAS10-9841**      **The University of Central Florida**      **2122**  
Kennedy Space Center precipitation monitoring program  
*Period*      *Obligations*  
06/15/80-10/31/81      FY81 \$15,794      TOTAL \$56,477  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Madsen, B C      KSC/Knott, W B      39-Env Sci, NEC

**NAS10-9897**      **The University of Central Florida**      **2123**  
Study entitled, air particulate sampling  
*Period*      *Obligations*  
07/30/80-10/29/81      FY81 \$4,061      TOTAL \$23,540  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hudson, G M      KSC/Knott, W M      31-Atmos Sci

**NAG 1-39**      **University of Florida**      **2124**  
The numerical solution of partial differential equations by the method of lines  
*Period*      *Obligations*  
02/01/80-10/31/81      FY81      TOTAL \$11,875  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Edwards, B H      LARC/Haigler, G W      21-Mathematics

**NAG 1-104**      **University of Florida**      **2125**  
Investigation of flow instabilities on a rotating disk with curvature in the radial direction  
*Period*      *Obligations*  
09/15/80-12/31/81      FY81      TOTAL \$20,266  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Clarkson, M H      LARC/Wilkinson, S P      41-Aero Engr  
LARC/Bushnell, D M

**NAG 1-135**      **University of Florida**      **2126**  
Research on solar-pumped liquid lasers  
*Period*      *Obligations*  
01/01/81-12/31/81      FY81 \$84,627      TOTAL \$84,627  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Schneider, R T      LARC/Deyoung, R J      13-Physics  
Carter, B D      LARC/Jalueka, N W

**NASA'S UNIVERSITY PROGRAM  
FLORIDA (Continued)**

**NAG 1-154**                      **University of Florida**                      **2127**  
Ohmic contacts, irradiation effects and thin film growth  
*Period*                                      *Obligations*  
03/01/81-02/28/82                      FY81 \$37,798                      TOTAL \$37,798  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Holloway, P H                      LARC/Outlaw, R A                      47-Materials Engr  
LARC/Walker, G H

**NAG 1-178**                      **University of Florida**                      **2128**  
Theoretical studies of atomic and molecular systems of potential use on solar-pumped lasers  
*Period*                                      *Obligations*  
05/01/81-04/30/82                      FY81 \$100,742                      TOTAL \$100,742  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Ohrn, N Y                      LARC/Meador, W E                      13-Physics  
Micha, D A                      LARC/Conway, E J

**NAG 2-46**                      **University of Florida**                      **2129**  
Studies in the accuracy of relative measurements  
*Period*                                      *Obligations*  
06/15/80-10/15/81                      FY81                      TOTAL \$20,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Eichhorn, H K                      ARC/Black, D C                      11-Astronomy

**NAG 5-110**                      **University of Florida**                      **2130**  
Observation of the lyman alpha line during primary eclipse of Beta Persie  
*Period*                                      *Obligations*  
10/01/80-03/31/82                      FY81                      TOTAL \$4,355  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Wood, F B                      GSFC/Corrigan, J P                      11-Astronomy

**NAGW 126**                      **University of Florida**                      **2131**  
Interplanetary dust dynamics                      Optical and physical properties and dynamics  
*Period*                                      *Obligations*  
10/01/80-03/31/82                      FY81 \$48,536                      TOTAL \$48,536  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Weinberg, J L                      HQ-SL/Brinton, H C                      31-Atmos Sci  
HQ-SL/Brunk, W E

**NAGW 196**                      **University of Florida**                      **2132**  
Analysis of Voyager radio data from Jupiter and Saturn  
*Period*                                      *Obligations*  
05/01/81-04/31/82                      FY81 \$40,000                      TOTAL \$40,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Carr, T D                      HQ-SL/Brunk, W E                      11-Astronomy

**NAG10-4**                      **University of Florida**                      **2133**  
Design/test of an online biomedical computer library  
*Period*                                      *Obligations*  
03/17/81-03/16/82                      FY81 \$21,500                      TOTAL \$21,500  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Grimes, R R                      KSC/Buchanan, P                      56-Medical Sciences

**NAS 2-9976**                      **University of Florida**                      **2134**  
Experiment implementation of a lightning and radio emission detector  
*Period*                                      *Obligations*  
05/31/78-03/31/82                      FY81 \$15,661                      TOTAL \$65,600  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Lanzerotti, L J                      ARC/Wilhelmi, A J                      31-Atmos Sci  
Uman, M A                      ARC/Tischler, E T

**NAS 2-11007**                      **University of Florida**                      **2135**  
Pioneer 10/11 imaging photopolarimeter (IPP) experiment observations of background starlight  
*Period*                                      *Obligations*  
05/18/81-05/17/82                      FY81 \$38,432                      TOTAL \$38,432  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Weinberg, J L                      ARC/Fimmel, R O                      11-Astronomy  
ARC/Prevost, F

**NAS 5-22908**                      **University of Florida**                      **2136**  
Nimbus-G experiment team for solar back-scattered ultraviolet and total ozone mapping system  
*Period*                                      *Obligations*  
12/19/75-12/31/81                      FY81                      TOTAL \$252,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Green, A E                      GSFC/Nelsen, E D                      49-Engr, NEC

**NAS 5-26383**                      **University of Florida**                      **2137**  
A shuttle Spacelab induced atmosphere experiment  
*Period*                                      *Obligations*  
11/04/80-04/30/83                      FY81 \$183,000                      TOTAL \$183,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Weinberg, J                      GSFC/Eiband, A M                      11-Astronomy

**NAS 5-26453**                      **University of Florida**                      **2138**  
Heat capacity mapping mission (HCMM) data investigation Use of thermal inertia temperature measurements predict nocturnal cold prone areas in Florida  
*Period*                                      *Obligations*  
03/16/81-07/15/82                      FY81 \$42,504                      TOTAL \$42,504  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Allen, L H                      GSFC/Stonesifer, G R                      31-Atmos Sci  
Chen, E Y  
Martsole, J D

**NAS10-9611**                      **University of Florida**                      **2139**  
Application of satellite freeze technology to other parts of the U S  
*Period*                                      *Obligations*  
05/04/79-05/03/80                      FY81                      TOTAL \$47,999  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Martsof, J D                      KSC/Horn, F W                      31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM  
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**NAS10-9666**                      **University of Florida**                      **2140**  
Color infrared applications to citiculture

<i>Period</i>		<i>Obligations</i>
07/19/79-01/18/81	FY81	TOTAL \$38,520
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Blazquez, C H	KSC/Horn, F W	39-Env Sci, NEC
	KSC/Barnett, U R	

**NGL 10-005-008**                      **University of Florida**                      **2147**  
Theoretical atmospheric physics

<i>Period</i>		<i>Obligations</i>
06/04/64-12/31/81	FY81	TOTAL \$666,460
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Green, A S	HQ-SL/Brinton, H C	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NAS10-9876**                      **University of Florida**                      **2141**  
Study entitled application of satellite freeze forecast technology to other parts of the US

<i>Period</i>		<i>Obligations</i>
07/10/80-07/09/81	FY81	TOTAL \$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Martsolf, J D	KSC/Horn, F W	31-Atmos Sci

**NGR 10-005-169**                      **University of Florida**                      **2148**  
Lightning studies

<i>Period</i>		<i>Obligations</i>
01/15/73-04/13/82	FY81 \$9,259	TOTAL \$93,455
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Uman, M A	KSC/Dietz, W R	31-Atmos Sci

**NAS10-9892**                      **University of Florida**                      **2142**  
Study entitled satellite freeze forecast system

<i>Period</i>		<i>Obligations</i>
07/31/80-11/30/81	FY81 \$99,998	TOTAL \$198,800
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Martsolf, J D	KSC/Horn, F W, Jr	31-Atmos Sci

**NGR 10-005-182**                      **University of Florida**                      **2149**  
Fundamental studies on electrolyte matrix processing

<i>Period</i>		<i>Obligations</i>
06/26/73-06/30/81	FY81	TOTAL \$102,667
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Walker, R D, Jr	LERC/Shebley, D W	43-Chem Engr

**NAS13-167**                      **University of Florida**                      **2143**  
Developing and teaching short courses in state of the art remote sensing techniques

<i>Period</i>		<i>Obligations</i>
11/24/80-11/23/81	FY81 \$16,990	TOTAL \$16,990
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hetrick, V	NSTL/Atwell, B H	32-Geological Sci
Henry, J A		

**NGT 10-005-800**                      **University of Florida**                      **2150**  
A separated flow study

<i>Period</i>		<i>Obligations</i>
09/01/80-12/31/82	FY81 \$11,420	TOTAL \$19,695
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clarkson, M	HQ-LC/Carter, C H	41-Aero Engr

**NCA 2-240101**                      **University of Florida**                      **2144**  
Mechanisms of fluid intake

<i>Period</i>		<i>Obligations</i>
01/01/81-12/31/82	FY81 \$28,800	TOTAL \$28,800
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fregly, M J	ARC/Greenleaf, J E	51-Biological Sci

**NGT 10-005-801**                      **University of Florida**                      **2151**  
Graduate student researchers program

<i>Period</i>		<i>Obligations</i>
09/01/80-12/31/81	FY81 \$3,404	TOTAL \$11,913
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fearn, R L	HQ-LC/Carter, C H	41-Aero Engr

**NCC 2-23**                      **University of Florida**                      **2145**  
The investigation of the flow about general fuselage shapes at high angles of attack

<i>Period</i>		<i>Obligations</i>
11/01/79-10/31/81	FY81	TOTAL \$95,855
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clarkson, M H	ARC/Malcolm, G N	41-Aero Engr

**NGT 10-005-802**                      **University of Florida**                      **2152**  
Graduate student researchers program

<i>Period</i>		<i>Obligations</i>
06/01/81-05/31/82	FY81 \$11,170	TOTAL \$11,170
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tesar, D	HQ-LC/Carter, C H	46-Mech Engr

**NCC 2-133**                      **University of Florida**                      **2146**  
The evaluation of a jet/aerodynamic surface interference model

<i>Period</i>		<i>Obligations</i>
08/15/81-08/14/82	FY81 \$26,375	TOTAL \$26,375
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fearn, R F	ARC/Koenig, D G	41-Aero Engr
Furlong, K L		

**NGT 10-005-803**                      **University of Florida**                      **2153**  
Graduate student researchers program

<i>Period</i>		<i>Obligations</i>
06/15/81-06/14/82	FY81 \$11,120	TOTAL \$11,120
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fearn, R L	HQ-LC/Carter, C H	41-Aero Engr



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**NSG 1425**                      **University of Florida**                      **2154**  
Study of the electronic properties in the electron and proton  
irradiated GaAlAs solar cell materials

<i>Period</i>	<i>Obligations</i>
09/01/77-08/31/81	FY81 \$21,000      TOTAL \$155,400
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Li, S S	LARC/Walker, G H      45-Elec Engr
	LARC/Conway, E J

**NSG 2288**                      **University of Florida**                      **2155**  
A jet in a crossflow

<i>Period</i>	<i>Obligations</i>
01/01/78-11/30/82	FY81      TOTAL \$170,261
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Fearn, R L	ARC/Aoyagi, K      41-Aero Engr
	ARC/Koenig, D G

**NSG 3018**                      **University of Florida**                      **2156**  
Silicon PN junction solar cells

<i>Period</i>	<i>Obligations</i>
06/24/74-02/29/80	FY81      TOTAL \$254,939
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lindholm, F A	LERC/Godlewski, M P      45-Elec Engr
Neugroschel, A	LERC/Brandhorst, H W, Jr

**NSG 3254**                      **University of Florida**                      **2157**  
Mechanisms of devitrification of grain boundary glassy phases  
in silicon nitride materials

<i>Period</i>	<i>Obligations</i>
03/26/79-03/24/82	FY81 \$45,000      TOTAL \$127,200
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hench, L L	LERC/Dutta, S      47-Materials Engr

**NSG 3273**                      **University of Florida**                      **2158**  
Evaluation of ion beam sputtered bioglass coatings of prosthetic  
devices

<i>Period</i>	<i>Obligations</i>
07/01/79-12/31/81	FY81      TOTAL \$25,525
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hench, L L	LERC/Kerslake, W R      56-Medical Sciences

**NSG 7236**                      **University of Florida**                      **2159**  
Use of remote sensing in solving Florida's geological and coastal  
engineering problems

<i>Period</i>	<i>Obligations</i>
07/01/76-06/30/84	FY81      TOTAL \$599,622
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ruth, B E	HQ-ET/Vitale, J A      39-Env Sci, NEC

**NAG 1-207**                      **University of Miami**                      **2160**  
A hybrid two-three dimensional photochemical model of the  
stratosphere and troposphere

<i>Period</i>	<i>Obligations</i>
08/11/81-08/10/82	FY81 \$55,811      TOTAL \$55,811
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Gidel, L T	LARC/Fishman, J      31-Atmos Sci

**NAG 5-166**                      **University of Miami**                      **2161**  
Two-dimensional semi-spectral model of stratospheric dynamics  
and photochemistry

<i>Period</i>	<i>Obligations</i>
05/01/81-04/30/82	FY81 \$18,507      TOTAL \$18,507
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Gidel, L T	GSFC/Alpert, J C      31-Atmos Sci

**NAG 6-13**                      **University of Miami**                      **2162**  
Initial investigations of sea water fluorescence absorption  
properties and their relevance to oceanic lidar interpretation

<i>Period</i>	<i>Obligations</i>
02/01/81-12/31/81	FY81 \$4,999      TOTAL \$4,999
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Zika, R G	WFC/Hoge, F E      33-Oceanography

**NAS 2-10524**                      **University of Miami**                      **2163**  
Life science experiment      Cell-to-cell communications in space

<i>Period</i>	<i>Obligations</i>
01/17/80-09/30/81	FY81 \$3,821      TOTAL \$28,210
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Loewenstein, W R	ARC/Ferandin, J A      51-Biological Sci
	ARC/Martens, J

**NAS 5-22963**                      **University of Miami**                      **2164**  
Nimbus G coastal zone color scanner sensor experiment

<i>Period</i>	<i>Obligations</i>
02/02/76-09/30/81	FY81 \$34,461      TOTAL \$204,826
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Gordon, H R	GSFC/Oakes, A G      31-Atmos Sci

**NAS 5-26201**                      **University of Miami**                      **2165**  
Investigations of medium wavelength magnetic anomalies in the  
Eastern Pacific using magnetic fields monitor satellite data

<i>Period</i>	<i>Obligations</i>
06/02/80-11/02/82	FY81 \$51,500      TOTAL \$81,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Harrison, C G	GSFC/Oseroff, H      32-Geological Sci

**NAS 8-33523**                      **University of Miami**                      **2166**  
Modification of a computer general circulation model of the  
Earth's atmosphere for the atmospheric general circulation  
experiment

<i>Period</i>	<i>Obligations</i>
04/16/80-05/15/82	FY81 \$90,367      TOTAL \$149,459
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Geisler, J E	MSFC/Fowles, W W      31-Atmos Sci
	MSFC/Fichtl, G H

**NAS 9-15473**                      **University of Miami**                      **2167**  
Study of sodium homeostasis and renin-aldosterone during water  
immersion

<i>Period</i>	<i>Obligations</i>
11/21/77-08/31/82	FY81 \$15,000      TOTAL \$105,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Epstein, M	JSC/Huntoon, C L      56-Medical Sciences

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**NAS10-9410**                      **University of Miami**                      **2168**  
Three dimensional thermal pollution mathematical model  
*Period*                                      *Obligations*  
06/06/78-08/05/80                      FY81                      TOTAL \$189,135  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Lee, S S                      KSC/Bland, R A                      46-Mech Engr  
Sengupta, S                      KSC/Barnett, U R

**NCA 2-438101**                      **University of Miami**                      **2169**  
Interchange for use of university facilities and services to support  
satellite communications development  
*Period*                                      *Obligations*  
08/01/81-07/31/82                      FY81 \$14,844                      TOTAL \$14,844  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Brown, O                      ARC/Gibbs, B P                      39-Env Sci, NEC

**NCC 2-152**                      **University of Miami**                      **2170**  
Studies of flight-deck automation  
*Period*                                      *Obligations*  
08/15/81-10/31/81                      FY81 \$12,000                      TOTAL \$12,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Wiener, E L                      ARC/Curry, R E                      69-Psych, NEC

**NGR 10-007-008**                      **University of Miami**                      **2171**  
Research in the Institute of Molecular Evolution in the School  
of Environmental and Planetary Sciences  
*Period*                                      *Obligations*  
06/09/64-10/31/81                      FY81 \$70,000                      TOTAL \$2,657,040  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Fox, S W                      HQ-SB/Devincenzi, D L                      12-Chemistry

**NSG 5342**                      **University of Miami**                      **2172**  
Tropical disturbances in relation to general circulation modeling  
*Period*                                      *Obligations*  
05/01/79-06/30/82                      FY81 \$88,425                      TOTAL \$237,793  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Estoque, M A                      GSFC/Halem, M                      31-Atmos Sci

**NSG 5344**                      **University of Miami**                      **2173**  
Research of ocean fronts and applications to Atlantic bluefish  
tuna utilization and management  
*Period*                                      *Obligations*  
04/04/79-11/30/81                      FY81                      TOTAL \$170,152  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Williams, F                      GSFC/McClain, C R                      33-Oceanography  
Maul, G A

**NAG 2-74**                      **University of South Florida**                      **2174**  
Investigations on the principles of zoogeography  
*Period*                                      *Obligations*  
09/15/80-10/31/81                      FY81 \$35,051                      TOTAL \$35,051  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Briggs, J C                      ARC/Billingham, J                      54-Env Biology

**NAS 1-16844**                      **University of South Florida**                      **2175**  
Fabrication and test of monitor for NH3, NHO3, NH+4 and  
NH-3  
*Period*                                      *Obligations*  
09/30/81-07/29/82                      FY81 \$41,756                      TOTAL \$41,756  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Braman, R S                      LARC/Hoell, J                      31-Atmos Sci

**GEORGIA**

**NAG 3-113**                      **Atlanta University**                      **2176**  
Design and implementation of a networked automated labora-  
tory  
*Period*                                      *Obligations*  
10/20/80-10/19/81                      FY81 \$150,981                      TOTAL \$150,981  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Owen, G S                      LERC/Goldstein, M                      19-Phys Sci, NEC

**NAG 8-9**                      **Atlanta University**                      **2177**  
Axially symmetric motions of a rotating stratified fluid  
*Period*                                      *Obligations*  
01/02/81-01/01/82                      FY81 \$23,467                      TOTAL \$23,467  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Martin, B J                      MSFC/Fowles, W W                      21-Mathematics  
MSFC/Kent, M I

**NAG10-3**                      **Atlanta University**                      **2178**  
Polymer fractography                      A scanning electron microscopy atlas of  
fractures  
*Period*                                      *Obligations*  
08/19/80-08/18/81                      FY81                      TOTAL \$55,676  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Korda, E J                      KSC/Bryan, C J                      47-Materials Engr

**NSG 2143**                      **Clark College**                      **2179**  
Aerosol formation and the Space Shuttle program  
*Period*                                      *Obligations*  
04/15/76-12/31/81                      FY81                      TOTAL \$131,589  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Veluri, V R                      ARC/Whitten, R C                      12-Chemistry  
Utley, H B                      ARC/Farlow, N H

**NAG 2-87**                      **Emory University**                      **2180**  
Effect of decreased gravity on circulation in the rat  
*Period*                                      *Obligations*  
01/01/81-12/31/81                      FY81 \$35,000                      TOTAL \$35,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Popovic, V P                      ARC/Holton, E M                      51-Biological Sci

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**GEORGIA (Continued)**

**NAS 2-10527** **Emory University** **2181**  
Cardiovascular adaptation of white rats to decreased gravity of Space Shuttle/Spacelab inflight conditions

Period	Obligations
01/17/80-09/30/81	FY81 \$2,440 TOTAL \$10,354
Prin Invest	NASA Tech Officer CASE Category
Popovic, V P	ARC/Ferandin, J A 51-Biological Sci
	ARC/Ginn, R

**NAS 2-10627** **Emory University** **2182**  
Maintenance of NASA primate resources and primate baseline data

Period	Obligations
05/01/80-04/30/82	FY81 \$123,525 TOTAL \$265,061
Prin Invest	NASA Tech Officer CASE Category
McClure, H M	ARC/Gomersall, E W 59-Life Sci, NEC

**NSG 735** **Fort Valley State College** **2183**  
Nitrogen fixation as an adjunct to wastewater purification systems using water hyacinths

Period	Obligations
07/17/79-07/16/81	FY81 TOTAL \$29,923
Prin Invest	NASA Tech Officer CASE Category
Brown, N B	NSTL/Wolverton, B C 39-Env Sci, NEC

**NAG 1-40** **Georgia Institute of Technology** **2184**  
Mean velocities and Reynolds stresses in a juncture flow

Period	Obligations
03/31/80-09/30/81	FY81 \$29,987 TOTAL \$59,969
Prin Invest	NASA Tech Officer CASE Category
McMahon, H M	LARC/Scheiman, J 41-Aero Engr
Hubbart, J E	
Kubendran, L	

**NAG 1-50** **Georgia Institute of Technology** **2185**  
Development of an airborne laser photofragmentation

Period	Obligations
03/01/80-02/28/82	FY81 \$172,430 TOTAL \$406,412
Prin Invest	NASA Tech Officer CASE Category
Davis, D D	LARC/Browell, E V 31-Atmos Sci
	LARC/Shipley, S T

**NAG 1-85** **Georgia Institute of Technology** **2186**  
The photochemistry of tropospheric carbon-oxygen (CO) and nitrogen-oxygen (NO)x and the impact anthropogenic emissions

Period	Obligations
07/01/80-06/30/82	FY81 \$65,000 TOTAL \$124,728
Prin Invest	NASA Tech Officer CASE Category
Chamrides, W L	LARC/Reichle, H G 31-Atmos Sci
	LARC/Wallio, H A

**NAG 1-133** **Georgia Institute of Technology** **2187**  
Development of an analytical technique for the optimization of jet engine inlet and duct acoustic liners

Period	Obligations
03/01/81-02/28/82	FY81 \$30,712 TOTAL \$30,712
Prin Invest	NASA Tech Officer CASE Category
Zinn, B T	LARC/Lester, H C 41-Aero Engr
Meyer, W L	LARC/Hardin, J C

**NAG 1-167** **Georgia Institute of Technology** **2188**  
Chromatographic analyses of sulfur and chlorine species in the marine troposphere

Period	Obligations
03/15/81-09/30/81	FY81 \$10,250 TOTAL \$10,250
Prin Invest	NASA Tech Officer CASE Category
Black, M S	LARC/Harris, R C 31-Atmos Sci

**NAG 2-11** **Georgia Institute of Technology** **2189**  
Molten carbonate CO2 concentrator

Period	Obligations
01/01/80-12/31/81	FY81 \$45,358 TOTAL \$90,427
Prin Invest	NASA Tech Officer CASE Category
Winnick, J	ARC/Quattrone, P D 59-Life Sci, NEC

**NAG 2-123** **Georgia Institute of Technology** **2190**  
Pilot interaction with automated airborne decision making systems

Period	Obligations
08/21/81-11/20/81	FY81 \$30,000 TOTAL \$30,000
Prin Invest	NASA Tech Officer CASE Category
Rouse, W B	ARC/Palmer, E A 49-Engr, NEC
	ARC/Curry, R E

**NAG 3-38** **Georgia Institute of Technology** **2191**  
Finite strain creep and creep crack growth analysis

Period	Obligations
06/01/80-05/30/82	FY81 \$49,991 TOTAL \$99,983
Prin Invest	NASA Tech Officer CASE Category
Atluri, S N	LERC/Gross, B 46-Mech Engr
Oliver, P R	LERC/Srawley, J E

**NAG 3-67** **Georgia Institute of Technology** **2192**  
Prediction of sound radiation from different practical jet engine inlets

Period	Obligations
06/02/80-05/31/82	FY81 \$49,877 TOTAL \$100,436
Prin Invest	NASA Tech Officer CASE Category
Zinn, B T	LERC/Saule, A V 41-Aero Engr
Meyer, W L	LERC/Rice, E J

**NAG 3-77** **Georgia Institute of Technology** **2193**  
Surface temperatures and glassy state investigations in tribology

Period	Obligations
07/01/80-10/30/81	FY81 TOTAL \$40,029
Prin Invest	NASA Tech Officer CASE Category
Winer, W O	LERC/Jones, W R 46-Mech Engr
Bair, S	

**NASA'S UNIVERSITY PROGRAM  
GEORGIA (Continued)**

**NAG 3-96** Georgia Institute of Technology **2194**  
Development of a spinning wave heat engine  
*Period* *Obligations*  
09/08/80-12/07/81 FY81 TOTAL \$50,498  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Zinn, B. T LERC/Phillips, B R 41-Aero Engr  
Powell, E A

**NAG 3-195** Georgia Institute of Technology **2195**  
Assistance in preparation of project paper on demonstration of renewable energy resources in Egypt  
*Period* *Obligations*  
06/16/81-10/15/81 FY81 \$41,132 TOTAL \$41,132  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Combes, R S LERC/Bozek, J M 31-Atmos Sci  
Clark, J L LERC/Scudder, L R  
Gibson, N S

**NAS 1-14351** Georgia Institute of Technology **2196**  
Benefit assessment of pollution monitoring satellites  
*Period* *Obligations*  
02/26/76-09/05/79 FY81 TOTAL \$172,339  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Zimmer, R P LARC/Lawrence, G F 31-Atmos Sci  
Sassone, P LARC/Rarer, J L  
Haffer, S C

**NAS 1-14654** Georgia Institute of Technology **2197**  
Investigation of the effects of long duration exposure on active optical system components  
*Period* *Obligations*  
10/14/76-09/14/81 FY81 TOTAL \$197,823  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Blue, M D LARC/O'Neal, R L 45-Elec Engr  
Gallagher, J J LARC/Battista, J D  
Shackelford, R G

**NAS 1-15370** Georgia Institute of Technology **2198**  
Holographic data storage crystals experiment for the long duration exposure facility (LDEF)  
*Period* *Obligations*  
04/21/78-01/31/82 FY81 TOTAL \$24,838  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Gaylord, T. K LARC/O'neal, R L 45-Elec Engr  
Callen, W R. LARC/Clark, L G

**NAS 1-16222** Georgia Institute of Technology **2199**  
Helicopter rotor loads using a matched asymptotic expansion technique study  
*Period* *Obligations*  
07/01/80-03/15/81 FY81 TOTAL \$20,465  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Pierce, G A LARC/Berry, J D 41-Aero Engr

**NAS 1-16356** Georgia Institute of Technology **2200**  
Science support for Earth Radiation Budget Satellite (ERBS)/ Stratospheric Aerosol and Gas Experiment (SAGE)  
*Period* *Obligations*  
08/07/80-08/06/85 FY81 \$14,000 TOTAL \$58,738  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Grams, G W LARC/McMaster, L R 31-Atmos Sci  
LARC/McCormick, M P

**NAS 1-16357** Georgia Institute of Technology **2201**  
Science support for Earth Radiation Budget Satellite (ERBS)/ Stratospheric Aerosol and Gas Experiment (SAGE)  
*Period* *Obligations*  
08/07/80-08/06/85 FY81 \$12,000 TOTAL \$38,528  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Cunnold, D M LARC/McMaster, L R 31-Atmos Sci  
LARC/McCormick, M P

**NAS 1-16817** Georgia Institute of Technology **2202**  
Helicopter rotor loads using a matched asymptotic expansion technique study  
*Period* *Obligations*  
09/21/81-08/04/82 FY81 \$20,331 TOTAL \$20,331  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Pierce, G A LARC/Berry, J D 41-Aero Engr

**NAS 1-16845** Georgia Institute of Technology **2203**  
Summer technological institute  
*Period* *Obligations*  
09/30/81-09/29/82 FY81 \$65,000 TOTAL \$65,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Chestnutt, C C LARC/Lee, R B 99-Multi-Discip

**NAS 5-24148** Georgia Institute of Technology **2204**  
Thunderstorm research international project 1977  
*Period* *Obligations*  
05/04/77-06/04/81 FY81 TOTAL \$84,715  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Saxena, S K GSFC/Levine, D M 31-Atmos Sci

**NAS 5-25817** Georgia Institute of Technology **2205**  
Study of Nimbus-7 applications investigation from priority 1 listing  
*Period* *Obligations*  
08/20/79-12/31/82 FY81 \$3,720 TOTAL \$71,833  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Cunwold, D M GSFC/Szajna, E F 39-Env Sci, NEC

**NAS 5-26304** Georgia Institute of Technology **2206**  
The prediction of the dynamical impact of changes in stratosphere ozone. Phase 1 (UARS)  
*Period* *Obligations*  
10/01/80-12/30/81 FY81 \$9,417 TOTAL \$20,417  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Cunnold, D M GSFC/Reber, C A 31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM**  
**GEORGIA (Continuedt)**

**NAS 5-26528** Georgia Institute of Technology 2207  
 Advanced microwave moisture sounder (AMMS) May/June 1981  
 WB-57 cope mission

Period	Obligations
04/03/81-10/31/81	FY81 \$63,889 TOTAL \$63,889
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Gagliano, J A	GSFC/King, L J 45-Elec Engr

**NAS 5-26586** Georgia Institute of Technology 2208  
 Storm hazards 81 program

Period	Obligations
05/07/81-04/01/82	FY81 \$25,673 TOTAL \$25,673
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Wilson, B J	GSFC/Levine, D M 31-Atmos Sci

**NAS 8-33438** Georgia Institute of Technology 2209  
 Quantitative analysis of metallurgical specimens

Period	Obligations
06/04/79-06/03/82	FY81 TOTAL \$15,968
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Brown, J L	MSFC/Johnston, M H
Johnson, J W	MSFC/Parr, R A 47-Materials Engr

**NAS 8-33800** Georgia Institute of Technology 2210  
 Ice/frost detection using millimeter wave radiometry

Period	Obligations
05/28/80-10/31/81	FY81 \$101,149 TOTAL \$137,286
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Gagliano, J A	MSFC/Gleason, E H 45-Elec Engr
	MSFC/Bachtel, F D

**NAS 8-34543** Georgia Institute of Technology 2211  
 Ka-band monopulse antenna

Period	Obligations
07/22/81-02/22/82	FY81 \$16,600 TOTAL \$16,600
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Kozakoff, D J	MSFC/Gleason, E H 45-Elec Engr
Newton, J M	MSFC/Stone, D

**NAS 9-16353** Georgia Institute of Technology 2212  
 Measurement of RF attenuation of OV102 flight Thermal  
 Protection System (TPS) over antenna subsystem

Period	Obligations
05/01/81-05/01/82	FY81 \$99,996 TOTAL \$99,996
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Cooke, W P	JSC/Eggers, D S 45-Elec Engr

**NAS10-9757** Georgia Institute of Technology 2213  
 Study entitled soil radar response study

Period	Obligations
02/15/80-08/15/80	FY81 TOTAL \$9,985
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Steinway, W J	KSC/Kassak, J E 32-Geological Sci
	KSC/Wojtasinski, R J

**NCA 2-260102** Georgia Institute of Technology 2214  
 Qualitative elemental analysis of high pressure liquid chromatogra-  
 phy peaks by induced coupled element separation An interfacing  
 study

Period	Obligations
06/23/81-12/15/81	FY81 \$8,017 TOTAL \$8,017
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Carden, J L	ARC/MacElroy, R D 12-Chemistry
	ARC/Wydeven, T, Jr

**NCC 2-9** Georgia Institute of Technology 2215  
 Three-dimensional simulation of the Jovian circulation

Period	Obligations
07/01/79-10/31/81	FY81 TOTAL \$25,994
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Alyea, F N	ARC/Young, R E 31-Atmos Sci

**NCC 2-119** Georgia Institute of Technology 2216  
 Engineering design and fabrication of a prototype state-of-the-art  
 space suit

Period	Obligations
02/15/81-02/14/83	FY81 \$157,217 TOTAL \$157,217
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Olson, L H	ARC/Vykukal, H C 49-Engr, NEC

**NCC 3-14** Georgia Institute of Technology 2217  
 Interdisciplinary collaboration in tribology

Period	Obligations
05/19/80-08/23/82	FY81 \$50,000 TOTAL \$90,366
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Winer, W O	LERC/Jones, W R 46-Mech Engr
Ramalingam, S	LERC/Wedeven, L D

**NGL 11-002-004** Georgia Institute of Technology 2218  
 Theoretical and experimental research program in geophysics with  
 emphasis on upper atmosphere chemical release studies

Period	Obligations
09/27/62-08/31/80	FY81 TOTAL \$815,075
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Edwards, H D	HQ-SL/Murphy, R E 31-Atmos Sci
	HQ-SL/Brunk, W E

**NSG 1493** Georgia Institute of Technology 2219  
 Science support for solar occultation experiments with the  
 Nimbus-G/SAM II and AEM-B/SAGE spacecraft sensors

Period	Obligations
01/16/78-12/31/81	FY81 \$20,975 TOTAL \$245,374
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>
Grams, G W	LARC/McMaster, L R 31-Atmos Sci
	LARC/McCormick, M P

# NASA'S UNIVERSITY PROGRAM

## GEORGIA (Continued)

**NSG 1643** Georgia Institute of Technology **2220**  
Ozone transport in the lower stratosphere and the ozone-NO2 relationship

Period	Obligations	
08/01/79-12/31/82	FY81	TOTAL \$40,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cunnold, D M	LARC/Master, L R	31-Atmos Sci
	LARC/McCormick, M P	

**NSG 2306** Georgia Institute of Technology **2221**  
Light-scattering calculations for the nephelometer experiment on the 1981/1982 Jupiter orbiter-probe mission

Period	Obligations	
03/01/78-11/30/81	FY81	TOTAL \$37,797
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Grams, G W	ARC/Ragent, B	31-Atmos Sci

**NSG 2323** Georgia Institute of Technology **2222**  
Chronology integration analyses for closed life support systems applicable to space habitats

Period	Obligations	
06/01/78-03/31/81	FY81	TOTAL \$309,654
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Carden, J L	ARC/Quattrone, P D	59-Life Sci, NEC
Roper, D		

**NSG 2356** Georgia Institute of Technology **2223**  
Development of molded, coated fabric joints

Period	Obligations	
12/01/78-10/31/81	FY81 \$20,000	TOTAL \$148,308
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Olson, L H	ARC/Vykukal, H C	49-Engr, NEC
Freeston, W D		

**NSG 2363** Georgia Institute of Technology **2224**  
In-situ measurements of optical properties of stratospheric aerosols using NASA U-2 aircraft

Period	Obligations	
02/01/79-10/31/81	FY81 \$42,700	TOTAL \$156,121
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Grams, G W	ARC/Page, W A	31-Atmos Sci

**NSG 3036** Georgia Institute of Technology **2225**  
Acoustic properties of turbofan inlets

Period	Obligations	
09/01/74-10/31/81	FY81	TOTAL \$134,633
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zinn, B T	LERC/Baumeister, K J	41-Aero Engr
Sigman, R K	LERC/Rice, E J	

**NSG 3106** Georgia Institute of Technology **2226**  
Surface temperatures and glassy state investigations in tribology

Period	Obligations	
05/15/76-07/01/80	FY81	TOTAL \$119,983
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Winer, W O	LERC/Jones, W R, Jr	46-Mech Engr
Bair, S		

**NSG 3228** Georgia Institute of Technology **2227**  
A study of poultry plant noise characteristics and potential noise control techniques

Period	Obligations	
10/01/78-05/31/81	FY81 \$15,000	TOTAL \$120,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wyvill, J C	LERC/Feiler, C E	13-Physics

**NSG 3260** Georgia Institute of Technology **2228**  
A viscous-inviscid interactive procedure for rotational flow in cascades of two-dimensional airfoils of arbitrary shape

Period	Obligations	
03/15/79-08/12/82	FY81 \$30,341	TOTAL \$78,036
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnston, W A	LERC/Sockol, P M	41-Aero Engr

**NSG 3307** Georgia Institute of Technology **2229**  
A new numerical approach for compressible viscous flows

Period	Obligations	
09/10/79-12/08/81	FY81	TOTAL \$98,674
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wu, J	LERC/McFarland, E R	41-Aero Engr
Lekoudis, S	LERC/Sockol, P M	

**NSG 5012** Georgia Institute of Technology **2230**  
Research in millimeter wave techniques

Period	Obligations	
06/15/74-01/31/82	FY81 \$60,000	TOTAL \$696,434
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Forsythe, R E	GSFC/King, J L	45-Elec Engr
	GSFC/Shue, J C	

**NSG 7069** Georgia Institute of Technology **2231**  
Photocatalytic synthesis on planetary surfaces Molecular bases for the adaptation of halophilic microorganisms

Period	Obligations	
09/15/74-09/30/80	FY81	TOTAL \$72,766
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hubbard, J S	HQ-SB/Young, R S	51-Biological Sci

**NAG 8-3** Morehouse College **2232**  
Numerical differentiation and interpolation procedure with error estimates for non-exact data

Period	Obligations	
02/15/80-09/14/81	FY81	TOTAL \$26,057
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bozeman, R E	MSFC/Campbell, W	21-Mathematics

**NAS 5-23571** Morehouse College **2233**  
Application of medical information management system for medical record keeping

Period	Obligations	
06/09/76-01/08/82	FY81	TOTAL \$122,865
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Barreras, R J	GSFC/Alterescu, S	56-Medical Sciences
	GSFC/Friedman, D S	

# **NASA'S UNIVERSITY PROGRAM** **GEORGIA (Continued)**

**NSG 7652** **Morehouse College** **2234**  
The matrix-isolation infrared-laser-raman study of the molecular structure of chlorine nitrate

<i>Period</i>	<i>Obligations</i>
09/30/79-09/29/81	FY81 \$45,000 TOTAL \$90,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hall, J H	HQ-EB/Watson, R T 12-Chemistry
	HQ-EB/Chandra, S

**NAS 5-26129** **University of Georgia** **2235**  
Urban area change detection procedure with remote sensing data

<i>Period</i>	<i>Obligations</i>
04/23/80-12/31/81	FY81 \$8,325 TOTAL \$28,286
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Jensen, J R	GSFC/Toll, D 21-Mathematics

**NASW 3247** **University of Georgia** **2236**  
For operation of Cosmic

<i>Period</i>	<i>Obligations</i>
05/01/79-04/30/82	FY81 \$250,000 TOTAL \$872,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hale, H	HQ-ET/Harrison, J O 22-Computer Science

**NAS13-123** **University of Georgia** **2237**  
Conduct short courses in remote sensing

<i>Period</i>	<i>Obligations</i>
05/18/79-05/31/80	FY81 TOTAL \$19,946
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Welch, R	NSTL/Atwell, B H 32-Geological Sci

**NAS13-137** **University of Georgia** **2238**  
Development of a technique to assess wetlands waste assimilation potential incorporating LANDSAT technology

<i>Period</i>	<i>Obligations</i>
12/20/79-01/03/81	FY81 TOTAL \$40,298
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cooley, J L	NSTL/Butera, M K 39-Env Sci, NEC

**NAS13-157** **University of Georgia** **2239**  
Remote sensing for state use

<i>Period</i>	<i>Obligations</i>
07/18/80-07/17/81	FY81 TOTAL \$18,218
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Welch, R	NSTL/Atwell, B H 32-Geological Sci

**NSG 7433** **University of Georgia** **2240**  
Irradiation effects on the surface of the Moon, Mercury, asteroids, and other airless solar system bodies due to solar high energy particles and cosmic rays

<i>Period</i>	<i>Obligations</i>
03/01/78-09/30/81	FY81 TOTAL \$66,367
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Wenner, D B	HQ-SL/Quaide, W L 32-Geological Sci

**NSG 7539** **University of Georgia** **2241**  
Comparative analysis of terrestrial and Martian labyrinth terrains

<i>Period</i>	<i>Obligations</i>
03/01/79-02/28/82	FY81 \$15,250 TOTAL \$50,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Brook, G	HQ-SL/Boyce, J M 32-Geological Sci
	HQ-SL/Holt, H E

## **HAWAII**

**NAG 2-59** **University of Hawaii - Manoa** **2242**  
Submillimeter observations of solar limb brightening in the solar eclipse of 31 July 1981

<i>Period</i>	<i>Obligations</i>
10/01/80-09/30/81	FY81 \$3,067 TOTAL \$29,067
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Becklin, E	ARC/Haughney, L C 11-Astronomy
Jefferies, J T	

**NAG 5-146** **University of Hawaii - Manoa** **2243**  
Magnesium observations of a young cluster

<i>Period</i>	<i>Obligations</i>
03/15/81-03/14/82	FY81 \$47,568 TOTAL \$47,568
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Simon, T	GSFC/Boggett, A 11-Astronomy
Linsky, J L	

**NAG 8-419** **University of Hawaii - Manoa** **2244**  
X-ray studies of Hertzprung gap and related stars

<i>Period</i>	<i>Obligations</i>
07/27/81-07/26/82	FY81 \$7,125 TOTAL \$7,125
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Simon, T	MSFC/Stone, J F 11-Astronomy

**NAGW 37** **University of Hawaii - Manoa** **2245**  
User support and data reduction and analysis of lunar core images

<i>Period</i>	<i>Obligations</i>
03/01/80-05/31/82	FY81 \$7,998 TOTAL \$54,369
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
McCord, T B	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/French, B M

**NAGW 42** **University of Hawaii - Manoa** **2246**  
Research on remote sensing and geologic studies of the lunar crust

<i>Period</i>	<i>Obligations</i>
03/01/80-04/30/82	FY81 \$49,407 TOTAL \$110,501
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hawke, R B	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/French, B M

## NASA'S UNIVERSITY PROGRAM HAWAII (Continued)

<b>NAGW 61</b>	<b>University of Hawaii - Manoa</b>	<b>2247</b>
<b>International conference on infrared astronomy</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/80-04/30/81</b>	<b>FY81</b>	<b>TOTAL \$4,035</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Cruikshank, D P</b>	<b>HQ-SL/Brunk, W E</b> <b>HQ-SL/Murphy, R E</b>	<b>11-Astronomy</b>

<b>NAGW 65</b>	<b>University of Hawaii - Manoa</b>	<b>2248</b>
<b>A colloquium on the satellites of Jupiter</b>		
<i>Period</i>		<i>Obligations</i>
<b>03/01/80-03/31/82</b>	<b>FY81</b>	<b>TOTAL \$14,308</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Cruikshank, D</b>	<b>HO-SL/Brunk, W E</b>	<b>11-Astronomy</b>

<b>NAGW 115</b>	<b>University of Hawaii - Manoa</b>	<b>2249</b>
<b>Spectral properties of ice-mineral mixtures</b>		
<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/81	FY81 \$30,395	TOTAL \$30,395
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clark, R N	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

NAGW 133	University of Hawaii - Manoa	2250
Volatile evolution		
<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$70,180	TOTAL \$70,180
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fanele, F	HQ-SL/Boyce, J M	32-Geological Sci
	HO-SL/Holt, H E	

<b>NAGW 136</b>	<b>University of Hawaii - Manoa</b>	<b>2251</b>
<b>Longitudinal asymmetries on Callisto and Europa</b>		
<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$10,196	<b>TOTAL \$10,196</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pilcher, C B	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

<b>NAGW 153</b>	<b>University of Hawaii - Manoa</b>	<b>2252</b>
<b>A study of the Io-associated plasma and neutral sodium cloud</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/81-03/31/82</b>	<b>FY81 \$23,000</b>	<b>TOTAL \$23,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Pilcher, C B</b>	<b>HQ-SL/Brinton, H C</b>	<b>13-Physics</b>
	<b>HQ-SL/Brunk, W E</b>	

<b>NAGW 171</b>	<b>University of Hawaii - Manoa</b>	<b>2253</b>
<b>Regolith adsorption and exchange of atmospheric constituents on Mars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/81-03/31/82</b>	<b>FY81: \$44,086</b>	<b>TOTAL \$44,086</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Fanale, F</b>	<b>HQ-SL/Quaide, W L</b>	<b>32-Geological Sci</b>
	<b>HQ-SL/Boyce, J M</b>	

NAGW 237	University of Hawaii - Manoa	2254
Geologic studies of planetary volcanic and impact processes		
<i>Period</i>	<i>Obligations</i>	
08/01/81-07/31/82	FY81 \$19,908	TOTAL \$19,908
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hawke, B R	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

<div>NAS 5-25181</div> <div>University of Hawaii - Manoa</div> <div>2255</div>	
<div>Modifications to and operations and maintenance of the Lunar</div> <div>Laser Observatory at the University of Hawaii in support of</div> <div>various satellite missions</div>	
Period	Obligations
08/09/78-09/30/82	FY81 \$689,000 TOTAL \$1,507,226
Prin Invest	NASA Tech Officer CASE Category
Jefferies, J T	GSFC/Adelman, A 11-Astronomy

<b>NAS 8-33219</b>	<b>University of Hawaii - Manoa</b>	<b>2256</b>
<b>The modeling of the solar upper photosphere and lower chromosphere based upon ATM data</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/79-12/31/81</b>	<b>FY81</b>	<b>TOTAL \$65,796</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Heasley, J N</b>	<b>MSFC/Deloach, A C.</b>	<b>13-Physics</b>
	<b>MSFC/Snoddy, W C</b>	

NAS 9-16048		University of Hawaii - Manoa		2257	
Life Science Flight Experiment surface chemical bubble-formation					
Period		Obligations			
01/17/80-10/31/82		FY81	\$9,707	TOTAL	\$15,157
Prin Invest		NASA Tech Officer		CASE Category	
D'arriso, J F		JSC/Peck, E E		59-Life Sci, NEC	

NASW 2801		University of Hawaii - Manoa	2258
Construction of the three meter infrared telescope facility at Mauna Kea, Hawaii			
Period		Obligations	
06/01/75-12/31/79	FY81	TOTAL	\$7,939,364
Prin Invest	NASA Tech Officer	CASE Category	
Jefferies, J T	HQ-SL/Weir, J F	11-Astronomy	
	HQ-SL/Brunk, W E		

NASW 3159		University of Hawaii - Manoa		2259	
Provision of support during the preparatory stage for operation of the NASA infrared telescope facility					
Period		Obligations			
01/01/78-12/31/81		FY81	\$1,267,648	TOTAL	\$3,009,712
Prin Invest		NASA Tech Officer		CASE Category	
Jefferies, J T		HQ-SL/Brunk, W E		11-Astronomy	
		HQ-SL/Murphy, R E.			



## NASA'S UNIVERSITY PROGRAM

### HAWAII (Continued)

<b>NASW 3460</b>	<b>University of Hawaii - Manoa</b>	<b>2260</b>
Construction of a data system for a charge coupled-device camera		
<i>Period</i>	<i>Obligations</i>	
01/15/81-01/14/82	FY81 \$66,336	TOTAL \$66,336
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pilcher, C B	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

<b>NGL 12-001-011</b>	<b>University of Hawaii - Manoa</b>	<b>2261</b>
<b>Research in coronal and chromospheric physics</b>		
<i>Period</i>	<i>Obligations</i>	
<b>11/16/64-10/31/81</b>	<b>FY81 \$286,131</b>	<b>TOTAL \$4,634,365</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Jefferies, J T</b>	<b>HO-SC/Chipman, E</b>	<b>11-Astronomy</b>

<b>NGL 12-001-057</b>		<b>University of Hawaii - Manoa</b>	<b>2262</b>
<b>Research in planetary studies</b>			
<i>Period</i>		<i>Obligations</i>	
05/21/68-06/30/81	<b>FY81</b>	<b>TOTAL</b>	<b>\$4,966,742</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Jefferies, J T	HQ-SL/Brunk, W E	11-Astronomy	
	HQ-SL/Murphy, R E		

NGR 12-001-109		University of Hawaii - Manoa	2263
N-heterocyclic compounds role in chemical evolution distribution in meteorites ancient sediments and as products of spark discharge reactions			
Period		Obligations	
06/26/72-05/14/82	FY81	\$57,037	TOTAL \$362,378
Pnn Invest	NASA Tech Officer	CASE Category	
Folsome, C E	HQ-SB/Devincenzi, D L	12-Chemistry	

<b>NSG 5317</b>	<b>University of Hawaii - Manoa</b>	<b>2264</b>
<b>Ground based solar observations for the Solar Maximum Mission (SMM)</b>		
<i>Period</i>	<i>Obligations</i>	
01/15/79-02/14/82	<b>FY81 \$3,875</b>	<b>TOTAL \$65,478</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jefferes, J T	GSFC/Wende, C	31-Atmos Sci

NSG 5326	University of Hawaii - Manoa	2265
Investigation of flare protons in the Sun's atmosphere		
<i>Period</i>	<i>Obligations</i>	
02/01/79-03/31/81	FY81	TOTAL \$17,375
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Orrall, F O	GSFC/Donley, J L	31-Atmos Sci

<b>NSG 7179</b>	<b>University of Hawaii - Manoa</b>	<b>2266</b>
<b>Crustal deformation observations</b>		
<i>Period</i>	<i>Obligations</i>	
10/20/75-05/31/81	FY81	TOTAL \$681,472
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Berg, E	HQ-ER/Finley, C J	19-Phys Sci, NEC
Sutton, G H	HQ-ER/Flinn, E A	
Laurila, S H		

NSG 7312	University of Hawaii - Manoa	2267
Remote compositional mapping of the lunar surface		
<i>Period</i>	<i>Obligations</i>	
02/01/77-03/31/82	FY81 \$175,000	TOTAL \$1,106,112
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McCord, T B	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

NSG 7323		University of Hawaii - Manoa		2268	
Research in planetary astronomy					
<i>Period</i>		<i>Obligations</i>			
02/01/77-01/31/82		FY81	\$115,000	TOTAL	\$470,329
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>		
McCord, T B	HQ-SL/Brunk, W E		11-Astronomy		
	HQ-SL/Murphy, R E				

<b>NSG 7403</b>	<b>University of Hawaii - Manoa</b>	<b>2269</b>
Study of physical processes affecting water ice on outer solar system objects		
<i>Period</i>	<i>Obligations</i>	
12/01/77-05/31/82	FY81 \$19,000	TOTAL \$62,326
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pilcher, C B	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

NSG 7462	University of Hawaii - Manoa	2270
An investigation of the mineralogy and petrology of meteorite parent bodies utilizing reflectance spectroscopy		
Period	Obligations	
07/15/78-04/30/82	FY81 \$41,742	TOTAL \$93,814
Prin Invest	NASA Tech Officer	CASE Category
Gaffey, M J	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

NSG 7536		University of Hawaii - Manoa		2271	
Research in ultraviolet spectroscopy					
Period		Obligations			
11/01/78-10/31/81		FY81 \$118,000		TOTAL \$325,800	
Prin Invest		NASA Tech Officer		CASE Category	
Jefferies, J T		HQ-SC/Chipman, E		13-Physics	

NSG 7590	University of Hawaii - Manoa	2272
Mars surface unit definition characterization		
<i>Period</i>	<i>Obligations</i>	
03/01/79-02/28/82	FY81 \$174,358	TOTAL \$379,212
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McCord, T B	HQ-SL/Quaide, W L	31-Atmos Sci
	HO-SL/Boyce, J M	

<b>NSG 7597</b>	<b>University of Hawaii - Manoa</b>	<b>2273</b>
<b>Geophysics and thermal evolution of small planetary objects</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/79-04/30/82</b>	<b>FY81 \$15,370</b>	<b>TOTAL \$45,816</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Gaffey, M J</b>	<b>HQ-SL/Quaide, W L</b>	<b>32-Geological Sci</b>
	<b>HQ-SL/French, B M</b>	

# NASA'S UNIVERSITY PROGRAM HAWAII (Continued)

**NSG 7633**                      **University of Hawaii - Manoa**                      **2274**  
Thermophysics of satellites and asteroids  
*Period*                                      *Obligations*  
07/01/79-10/30/81                      FY81 \$16,467                      TOTAL \$28,609  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Pilcher, C B                      HQ-SL/Boyce, J M                      13-Physics  
HQ-SL/Holt, H E

## IDAHO

**NAG 5-93**                      **University of Idaho**                      **2275**  
Pipeline processor design for communication systems  
*Period*                                      *Obligations*  
08/01/80-01/31/82                      FY81                      TOTAL \$18,757  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Maki, G K                      GSFC/Miller, W H                      29-Math Computer Sci, NEC

**NAS 5-26534**                      **University of Idaho**                      **2276**  
Design, development, fabrication and testing of a Reed-Solomon (RS) encoder/decoder unit  
*Period*                                      *Obligations*  
04/28/81-01/28/82                      FY81 \$50,000                      TOTAL \$50,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Maki, G K                      GSFC/Miller, W H                      45-Elec Engr  
GSFC/Morakis, J C

## ILLINOIS

**NCA 2-207101**                      **Eastern Illinois University**                      **2277**  
Application of perturbed iterative scheme(PIS) to transonic flows  
*Period*                                      *Obligations*  
12/01/80-10/31/81                      FY81 \$5,040                      TOTAL \$5,040  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Dev, S K                      ARC/Goorian, P M                      21-Mathematics

**NAG 1-5**                      **Illinois Institute of Technology**                      **2278**  
Structural optimization with damage tolerance constraints  
*Period*                                      *Obligations*  
11/15/79-11/14/81                      FY81 \$30,000                      TOTAL \$70,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Haftka, R T                      LARC/Starnes, J H, Jr                      41-Aero Engr

**NAG 1-74**                      **Illinois Institute of Technology**                      **2279**  
Optimization of flow manipulation placement ahead of wind-tunnel contraction  
*Period*                                      *Obligations*  
07/01/80-09/30/81                      FY81                      TOTAL \$27,440  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Tan-atichat, J                      LARC/Scheiman, J                      41-Aero Engr  
LARC/Stainback, P C

**NSG 1266**                      **Illinois Institute of Technology**                      **2280**  
Automated sizing of aerospace structures under multiple constraints  
*Period*                                      *Obligations*  
12/01/75-10/31/81                      FY81 \$48,400                      TOTAL \$229,010  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Haftka, R T                      LARC/Adelman, H M                      41-Aero Engr

**NSG 1591**                      **Illinois Institute of Technology**                      **2281**  
Management of turbulent flow structures in boundary layers aimed at drag reduction  
*Period*                                      *Obligations*  
01/15/79-04/14/82                      FY81 \$45,753                      TOTAL \$126,375  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Nagib, H M                      LARC/Hefner, J N                      41-Aero Engr  
Corke, T C                      LARC/Bushnell, D M

**NSG 3220**                      **Illinois Institute of Technology**                      **2282**  
Management of turbulence and vorticity in contracting flows with applications to simulations of flight fan noise  
*Period*                                      *Obligations*  
09/15/78-11/13/81                      FY81 \$70,000                      TOTAL \$187,340  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Nagib, H M                      LERC/Groeneweg, J F                      41-Aero Engr  
Tan-atichat, J

**NAGW 131**                      **Loyola University of Chicago**                      **2283**  
Role of gravity in leaf blade form  
*Period*                                      *Obligations*  
01/01/80-12/31/81                      FY81 \$20,075                      TOTAL \$20,075  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Hayes, A B                      HQ-SB/Halstead, T W                      51-Biological Sci

**NAG 1-180**                      **Northwestern University**                      **2284**  
A reappraisal of future aircraft equipment needs 1985-2000 under the changed economic regulatory and technical environment as perceived by airline operators  
*Period*                                      *Obligations*  
05/01/81-12/31/81                      FY81 \$26,765                      TOTAL \$26,765  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Spencer, F A                      LARC/Graves, E B                      99-Multi-Discip

**NAG 1-210**                      **Northwestern University**                      **2285**  
Mixed time intergration methods for transient thermal analysis of structures  
*Period*                                      *Obligations*  
10/01/81-09/30/82                      FY81 \$36,235                      TOTAL \$36,235  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Liu, W K                      LARC/Olsen, G C                      29-Math Computer Sci, NEC

**NAG 3-53**                      **Northwestern University**                      **2286**  
Mechanisms of lean limit extinction  
*Period*                                      *Obligations*  
04/04/80-04/01/83                      FY81 \$59,999                      TOTAL \$89,999  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Law, C K                      LERC/Baker, C E                      46-Mech Engr

## NASA'S UNIVERSITY PROGRAM

### ILLINOIS (Continued)

<b>NAG 3-134</b>	<b>Northwestern University</b>	<b>2287</b>
<b>High temperature nonlinear constitutive material behavior with thermal fatigue</b>		
<i>Period</i>	<i>Obligations</i>	
11/24/80-11/23/81	FY81 \$60,668	TOTAL \$60,668
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nemat-nasser, S	LERC/Chamis, C C	13-Physics

<b>NAG 5-181</b>	<b>Northwestern University</b>	<b>2288</b>
<b>Research relative to electroformed X-ray mirrors</b>		
<i>Period</i>	<i>Obligations</i>	
05/15/81-05/14/82	FY81 \$32,300	TOTAL \$32,300
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ulmer, M P	GSFC/Guidotti, J G	11-Astronomy
	HO-SC/Holt, S S	

<b>NAG 8-326</b>	<b>Northwestern University</b>	<b>2289</b>
Observations of distant Abell clusters discovered as X-ray sources by High Energy Astronomical Observatory-A-1 and observations of IC 3576 and NGC 4410 A/B		
<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81	TOTAL \$13,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ulmer, M P	MSFC/Jones, J B	11-Astronomy
Bhavsar, S		
Shulman, S		

<b>NAG 8-367</b>	<b>Northwestern University</b>	<b>2290</b>
<b>Research in galactic and extragalactic X-ray astronomy</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/20/80-08/10/82</b>	<b>FY81</b>	<b>TOTAL \$13,688</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Ulmer, M P</b>	<b>MSFC/Stone, J F</b>	<b>11-Astronomy</b>

<b>NAG 8-368</b>	<b>Northwestern University</b>	<b>2291</b>
<b>Observations of Abell clusters discovered as X-ray sources by HEAO-A-1, II</b>		
<i>Period</i>	<i>Obligations</i>	
08/15/80-08/15/82	FY81	<b>TOTAL \$13,747</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ulmer, M P	MSFC/Stone, J F	11-Astronomy

<b>NAG 8-415</b>	<b>Northwestern University</b>	<b>2292</b>
<b>Observations of massive O type runaway stars</b>		
<i>Period</i>	<i>Obligations</i>	
07/15/81-07/14/82	FY81 \$1,888	<b>TOTAL \$1,888</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Taam, R E	MSFC/Stone, J F	11-Astronomy

NAG 8-416		Northwestern University	2293
Observations of Abell clusters discovered as X-ray sources by HEAO A-1, III			
<i>Period</i>	<i>Obligations</i>		
07/18/81-07/17/82	FY81	\$5,354	TOTAL \$5,354
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Ulmer, M P	MSFC/Stone, J F		11-Astronomy

NAS 8-33010	Northwestern University	2294
Research in galactic and extragalactic astronomy HEAO-1		
<i>Period</i>	<i>Obligations</i>	
06/01/78-09/30/81	FY81	TOTAL \$38,383
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ulmer, M P	MSFC/Jones, J B, Jr	11-Astronomy

NAS 8-33354	Northwestern University	2295
Observations of Abell cluster		
<i>Period</i>	<i>Obligations</i>	
07/15/79-12/04/81	FY81	TOTAL \$7,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ulmer, M P	MSFC/Jones, J B, Jr	11-Astronomy

<b>NAS 8-33881</b>	<b>Northwestern University</b>	<b>2296</b>
<b>Thermocapillary flows and their stability and contamination</b>	<b>Effects of surface layers</b>	
<i>Period</i>	<i>Obligations</i>	
07/11/80-07/10/83	FY81 \$120,000	TOTAL \$243,874
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Davis, S H	MSFC/Moore, W W	
	MSFC/Schafer, C F	19-Phys Sci, NEC

NCC 3-13	Northwestern University	2297
Interdisciplinary collaboration in tribiology		
<i>Period</i>	<i>Obligations</i>	
05/19/80-11/18/81	FY81	TOTAL \$18,757
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cheng, H S	LERC/Wedeven, L D	46-Mech Engr

<b>NGL 14-007-041</b>	<b>Northwestern University</b>	<b>2298</b>
<b>A study of celestial objects of high angular momenta</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/18/66-10/31/82</b>	<b>FY81</b>	<b>TOTAL \$265,251</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Huang, S S</b>	<b>HQ-SC/Weiler, E J</b>	<b>11-Astronomy</b>

<b>NSG 3143</b>	<b>Northwestern University</b>	<b>2299</b>
<b>Dynamic load and lubrication of spiral bevel gears</b>		
<i>Period</i>	<i>Obligations</i>	
03/15/77-12/14/81	FY81 \$34,430	TOTAL \$138,067
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cheng, H S	LERC/Coy, J J	46-Mech Engr
	LERC/Zaretsky, E V	

NAS 9-16035	Rush University	2300
Response to sudden torques about the ankle man	The myotatic	
reflex		
<i>Period</i>	<i>Obligations</i>	
01/17/80-01/31/82	FY81 \$17,432	TOTAL \$39,932
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gottlieb, G L	JSC/Evans, J S	59-Life Sci, NEC

## NASA'S UNIVERSITY PROGRAM ILLINOIS (Continued)

NCC 3-7	Southern Illinois University - Carbondale		2301
Lighting protection for wind turbines study			
<i>Period</i>	<i>Obligations</i>		
03/01/80-03/30/82	FY81 \$120,243	TOTAL \$226,916	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Dodd, C W	LERC/Bankaitis, H V	45-Elec Engr	
Smith, J G	LERC/Finnegan, P M		
McCalla, T M			

NGT 14-018-800		Southern Illinois University - Carbondale		2302
Graduate student researchers program				
<i>Period</i>		<i>Obligations</i>		
08/01/81-07/31/82	FY81.	\$13,000	TOTAL	\$13,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Phillips, J B	HQ-LC/Carter	C H	12-Chemistry	

<b>NAG 5-53</b>	<b>University of Chicago</b>	<b>2303</b>
<b>Observations of highly obscured interstellar clouds</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/80-07/31/81</b>	<b>FY81 \$8,500</b>	<b>TOTAL \$22,500</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Frisch, P C</b>	<b>GSFC/Boggess, A</b>	<b>11-Astronomy</b>

<b>NAG 5-125</b>	<b>University of Chicago</b>	<b>2304</b>
Ultraviolet observations of an interstellar cloud with anomalous depletions		
<i>Period</i>	<i>Obligations</i>	
10/15/80-10/14/81	FY81 \$9,700	TOTAL \$9,700
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Frisch, P C	GSFC/Corrigan, J P	11-Astronomy

<b>NAG 5-129</b>	<b>University of Chicago</b>	<b>2305</b>
<b>Parameterization of cumulus convection and relative effects of clouds</b>		
<i>Period</i>	<i>Obligations</i>	
12/15/80-12/14/81	FY81 \$57,265	TOTAL \$57,265
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kuo, H L	GSFC/Rivas, E	31-Atmos Sci

<b>NAGW 4</b>	<b>University of Chicago</b>	<b>2306</b>
Submillimeter astronomy at the NASA University of Hawaii 3-meter infrared telescope facility		
<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/81	FY81	TOTAL \$112,758
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hildebrand, R H	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

NAGW 123	University of Chicago	2307
Supernovae as cosmological distance indicators		
<i>Period</i>	<i>Obligations</i>	
12/01/80-11/30/81	FY81 \$27,000	TOTAL \$27,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnett, W D	HQ-SC/Kaluzienski, L J	11-Astronomy
	HQ-SC/Weiler, E J	

NAS 2-6551	University of Chicago	2308
Pioneer F/G charged particle experiment data analysis		
<i>Period</i>	<i>Obligations</i>	
08/09/71-09/30/81	FY81 \$195,015	TOTAL \$2,134,176
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simpson, J A	ARC/Fimmel, R O	11-Astronomy
	ARC/Dyer, J W	

NAS 5-20674	University of Chicago	2309
Quasi ray electrons experiment for ISEE-C heliocentric orbit		
<i>Period</i>	<i>Obligations</i>	
10/24/74-12/31/81	FY81 \$43,595	TOTAL \$1,325,970
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meyer, P	GSFC/Wales, R O	13-Physics

<b>NAS 5-24430</b>	<b>University of Chicago</b>	<b>2310</b>
Design, develop, fabricate and testing of a scientific instrument for an experiment to measure cosmic ray isotopes		
<i>Period</i>	<i>Obligations</i>	
12/01/77-06/07/84	FY81 \$88,466	TOTAL \$1,334,782
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simpson, J A	GSFC/Davis, M A	13-Physics

<b>NAS 5-25731</b>	<b>University of Chicago</b>	<b>2311</b>
<b>Interplanetary monitoring platform-J data reduction and analysis</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/01/79-09/30/82</b>	<b>FY81 \$110,000</b>	<b>TOTAL \$207,885</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Simpson, J A</b>	<b>GSFC/Gemmell, J</b>	<b>11-Astronomy</b>

<b>NAS 5-26076</b>	<b>University of Chicago</b>	<b>2312</b>
<b>Definition phase for transition radiation and ionization calorimeter (TRIC) telescope</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/21/80-02/27/81</b>	<b>FY81</b>	<b>TOTAL \$139,145</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Muller, D</b>	<b>GSFC/Ormes, J F</b>	<b>11-Astronomy</b>

<b>NAS 5-26099</b>	<b>University of Chicago</b>	<b>2313</b>
Plan and establish preliminary interfaces for the cosmic ray nuclei experiment		
<i>Period</i>	<i>Obligations</i>	
03/21/80-04/30/81	FY81	TOTAL \$24,282
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meyer, P	GSFC/Sing, M	11-Astronomy

NAS 5-26680	University of Chicago	2314
International Sun-Earth Explorer	cosmic ray electron experiment	
Period	Obligations	
06/01/81-10/31/82	FY81 \$104,000	TOTAL \$104,000
Prin Invest	NASA Tech Officer	CASE Category
Meyer, P	GSFC/Corrigan, J P	31-Atmos Sci

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ILLINOIS (Continued)**

<b>NAS 8-32828</b>	<b>University of Chicago</b>	<b>2315</b>
Elemental composition and energy spectra of cosmic ray nuclei		
<i>Period</i>	<i>Obligations</i>	
10/28/77-11/30/84	FY81 \$1,500,000 TOTAL \$5,045,103	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meyer, P	MSFC/Guynes, B V	31-Atmos Sci
Muller, D	MSFC/Ise, R	
<b>NAS 8-33350</b>	<b>University of Chicago</b>	<b>2316</b>
Guest investigator effort on the High Energy Astronomy Observatory C-2		
<i>Period</i>	<i>Obligations</i>	
05/30/79-05/30/81	FY81 TOTAL \$25,000	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meyer, P	MSFC/Jones, J B , Jr	11-Astronomy
<b>NCA 2-108101</b>	<b>University of Chicago</b>	<b>2317</b>
Numerical experiments in the formation of galaxies and clusters of galaxies		
<i>Period</i>	<i>Obligations</i>	
06/02/81-06/01/83	FY81 \$19,800 TOTAL \$19,800	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miller, R H	ARC/Smith, B F	11-Astronomy
<b>NCA 2-108902</b>	<b>University of Chicago</b>	<b>2318</b>
Numerical experiments in galactic dynamics and planetary formation		
<i>Period</i>	<i>Obligations</i>	
11/15/78-06/01/81	FY81 TOTAL \$20,992	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miller, R H	ARC/Smith, B F	11-Astronomy
Arnett, W D		
<b>NGL 14-001-001</b>	<b>University of Chicago</b>	<b>2319</b>
Investigation of effects of solar wind in interplanetary space		
<i>Period</i>	<i>Obligations</i>	
08/01/60-12/31/81	FY81 \$99,975 TOTAL \$1,341,547	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Parker, E N	HQ-SC/Gilman, D A	11-Astronomy
	HQ-SC/Holt, S S	
<b>NGL 14-001-005</b>	<b>University of Chicago</b>	<b>2320</b>
High altitude balloon investigations on composition, energy spectrum and intensity of primary cosmic radiation at high and intermediate geomagnetic latitudes		
<i>Period</i>	<i>Obligations</i>	
05/01/61-10/31/81	FY81 \$350,000 TOTAL \$6,685,258	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meyer, P	HQ-SC/Kaluzienski, L J	11-Astronomy
	HQ-SC/Holt, S S	
<b>NGL 14-001-006</b>	<b>University of Chicago</b>	<b>2321</b>
Experimental and theoretical studies of energetic particles and electrodynamic processes in interplanetary space and in vicinity of planets		
<i>Period</i>	<i>Obligations</i>	
08/01/61-12/31/81	FY81 \$407,000 TOTAL \$7,299,396	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simpson, J A	HQ-SC/Holt, S S	11-Astronomy
	HQ-SC/Kaluzienski, L J	
<b>NGL 14-001-010</b>	<b>University of Chicago</b>	<b>2322</b>
Research and investigation of origin, age and composition of meteorites		
<i>Period</i>	<i>Obligations</i>	
03/11/63-03/31/82	FY81 \$313,000 TOTAL \$2,068,503	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anders, E	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	
<b>NGL 14-001-167</b>	<b>University of Chicago</b>	<b>2323</b>
Lunar sample analysis		
<i>Period</i>	<i>Obligations</i>	
03/29/72-01/31/82	FY81 \$1,175 TOTAL \$1,740,005	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anders, E	JSC/Harris, J W	13-Physics
<b>NGL 14-001-169</b>	<b>University of Chicago</b>	<b>2324</b>
Lunar sample analysis		
<i>Period</i>	<i>Obligations</i>	
01/19/71-01/31/82	FY81 \$182,952 TOTAL \$1,188,560	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clayton, R N	JSC/Warner, J L	12-Chemistry
<b>NGL 14-001-171</b>	<b>University of Chicago</b>	<b>2325</b>
Lunar sample analysis		
<i>Period</i>	<i>Obligations</i>	
01/19/71-01/31/82	FY81 \$120,032 TOTAL \$823,684	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, J V	JSC/Warner, J L	13-Physics
<b>NGL 14-001-258</b>	<b>University of Chicago</b>	<b>2326</b>
Advanced technical developments in support of scientific experiments in space		
<i>Period</i>	<i>Obligations</i>	
06/15/73-03/31/83	FY81 \$400,000 TOTAL \$2,195,996	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meyer, P	HQ-SP/Taylor, T C	99-Multi-Discip
Muller, D	HQ-SP/Heninger, L W	
Simpson, J A		
<b>NGR 14-001-008</b>	<b>University of Chicago</b>	<b>2327</b>
Meteorological interpretation of satellite radiation data		
<i>Period</i>	<i>Obligations</i>	
09/01/70-10/31/81	FY81 \$77,000 TOTAL \$1,599,000	
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fujita, T T	HQ-EB/Dodge, J C	31-Atmos Sci

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**ILLINOIS (Continued)**

**NGR 14-001-135**      **University of Chicago**      **2328**  
Feasibility of the alpha scattering technique for Martian surface analysis  
*Period*      *Obligations*  
02/25/69-11/30/81      FY81 \$78,132      TOTAL \$909,976  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Turkevich, A L      HQ-SL/French, B M      32-Geological Sci

**NGR 14-001-147**      **University of Chicago**      **2329**  
Interferometric high-resolution spectroscopy of optical interstellar lines  
*Period*      *Obligations*  
03/18/70-06/30/82      FY81 \$37,515      TOTAL \$358,563  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hobbs, L M      HQ-SC/Weiler, E J      11-Astronomy  
HQ-SC/Boggess, N W

**NGR 14-001-225**      **University of Chicago**      **2330**  
Physiology of the vestibular system of the squirrel monkey  
*Period*      *Obligations*  
05/12/67-03/31/82      FY81 \$49,000      TOTAL \$516,893  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Goldberg, J M      ARC/Daunton, N G      51-Biological Sci

**NGR 14-001-227**      **University of Chicago**      **2331**  
Photometry of galactic and extragalactic far infrared sources using the 91.5 cm airborne infrared telescope  
*Period*      *Obligations*  
02/27/73-09/30/82      FY81 \$135,174      TOTAL \$821,839  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Harper, D A, Jr      ARC/Haughney, L C      11-Astronomy

**NGR 14-001-249**      **University of Chicago**      **2332**  
Physical properties of solar nebula as deduced from chondrites  
*Period*      *Obligations*  
05/14/73-03/31/82      FY81 \$150,202      TOTAL \$928,389  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Grossman, L      HQ-SL/French, B M      32-Geological Sci  
HQ-SL/Quaide, W L

**NSG 2057**      **University of Chicago**      **2333**  
Study of sensitive detection system for far infrared astronomy  
*Period*      *Obligations*  
12/01/74-10/31/81      FY81 \$75,700      TOTAL \$313,466  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hildebrand, R H      ARC/Haughney, L C      11-Astronomy

**NSG 5402**      **University of Chicago**      **2334**  
Research of precipitation growth in convective clouds  
*Period*      *Obligations*  
08/01/79-07/31/81      FY81      TOTAL \$26,474  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Srivastava, R C      GSFC/Adler, R F      31-Atmos Sci

**NSG 7212**      **University of Chicago**      **2335**  
Nuclear astrophysics effects in meteoritic and lunar material  
*Period*      *Obligations*  
03/01/76-02/28/82      FY81 \$55,601      TOTAL \$260,246  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Schramm, D N      HQ-SL/Quaide, W L      32-Geological Sci  
HQ-SL/French, B E

**NSG 7303**      **University of Chicago**      **2336**  
Applications of electron microscopy in molecular exobiology and extraterrestrial research  
*Period*      *Obligations*  
12/01/76-12/31/82      FY81      TOTAL \$105,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Fernandez, H      HQ-SB/Soffen, G A      51-Biological Sci

**NSG 7464**      **University of Chicago**      **2337**  
Studies of the energy spectrum of cosmic ray electrons  
*Period*      *Obligations*  
07/01/78-07/31/81      FY81 \$80,000      TOTAL \$240,332  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Muller, D      HQ-SC/Gilman, D A      31-Atmos Sci  
HQ-SC/Holt, S S

**NSG 7532**      **University of Chicago**      **2338**  
Chemical analysis by alpha particle techniques on a cometary mission  
*Period*      *Obligations*  
01/01/79-04/01/80      FY81      TOTAL \$123,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Turkevich, A L      HQ-SL/French, B M      32-Geological Sci  
HQ-SL/Quaide, W L

**NSG 7550**      **University of Chicago**      **2339**  
Ion and electron microprobe analyses of meteoritic minerals  
*Period*      *Obligations*  
02/01/79-07/31/81      FY81      TOTAL \$54,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Smith, J V      HQ-SL/French, B M      32-Geological Sci  
HQ-SL/Quaide, W L

**NAG 3-48**      **University of Illinois - Chicago Circle**      **2340**  
Synthesis and optimization of spiral bevel gear tooth surfaces  
*Period*      *Obligations*  
03/21/80-08/19/83      FY81 \$80,469      TOTAL \$131,884  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Litvin, F L      LERC/Coy, J J      46-Mech Engr

**NAG 3-136**      **University of Illinois - Chicago Circle**      **2341**  
Preparation of a NASA reference publications entitled 'theory of gearing'  
*Period*      *Obligations*  
12/08/80-12/07/82      FY81 \$50,000      TOTAL \$50,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Litvin, F L      LERC/Coy, J J      46-Mech Engr

# **NASA'S UNIVERSITY PROGRAM** **ILLINOIS (Continued)**

**NCA 2-330101**      **University of Illinois - Chicago Circle**      **2342**  
Multiple dimensional radiative transfer and aerosol properties in support of climate studies

<i>Period</i>	<i>Obligations</i>
10/01/80-12/31/81	FY81 \$26,620      TOTAL \$26,620
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cogley, A C	ARC/Pollack, J B      49-Engr, NEC
Bergstrom, R W	

**NAG 1-76**      **University of Illinois, Urbana**      **2343**  
The study of wake pressure recovery as a factor in airfoil design

<i>Period</i>	<i>Obligations</i>
06/15/80-06/14/82	FY81 \$51,242      TOTAL \$91,142
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ormsbee, A I	LARC/Somers, D M      41-Aero Engr

**NAG 1-90**      **University of Illinois, Urbana**      **2344**  
Multi-level semantic analysis and problem solving in the flight domain

<i>Period</i>	<i>Obligations</i>
07/11/80-07/10/81	FY81      TOTAL \$74,900
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Chien, R T	LARC/Hankins, W W      41-Aero Engr
	LARC/Pennington, J E5

**NAG 1-138**      **University of Illinois, Urbana**      **2345**  
Automate the management of software production systems

<i>Period</i>	<i>Obligations</i>
01/21/81-01/20/82	FY81 \$64,918      TOTAL \$64,918
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Campbell, R H	LARC/Senn, E H      22-Computer Science
	LARC/Voigt, S J

**NAG 2-94**      **University of Illinois, Urbana**      **2346**  
Studies of the role of metastables and doubly ionized species in the chemical and thermal structure of the Venusian and Martian ionospheres

<i>Period</i>	<i>Obligations</i>
12/01/80-11/30/81	FY81 \$24,992      TOTAL \$24,992
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Fox, J L	ARC/Fimmel, R O      19-Phys Sci, NEC

**NAG 3-60**      **University of Illinois, Urbana**      **2347**  
The mechanisms of flame holding in the wake of a bluff body

<i>Period</i>	<i>Obligations</i>
05/21/80-05/18/83	FY81 \$60,000      TOTAL \$90,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Strehlow, R A	LERC/Baker, C E      41-Aero Engr

**NAG 3-149**      **University of Illinois, Urbana**      **2348**  
Investigation of adaptive multibeam phased array technique

<i>Period</i>	<i>Obligations</i>
01/02/81-12/31/81	FY81 \$35,000      TOTAL \$35,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Mittra, R	LERC/Smetana, J      45-Elec Engr
Lee, S W	
Ko, W L	

**NAG 3-153**      **University of Illinois, Urbana**      **2349**  
Lubricating effectiveness of solid lubricant additives in mineral oils

<i>Period</i>	<i>Obligations</i>
01/15/81-01/14/82	FY81 \$34,445      TOTAL \$34,445
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cusano, C	LERC/Fusaro, R L      46-Mech Engr

**NAG 5-84**      **University of Illinois, Urbana**      **2350**  
Study the dynamics of old supernova remnants by comparison of multi-wavelength data

<i>Period</i>	<i>Obligations</i>
06/25/80-12/31/81	FY81 \$1,160      TOTAL \$3,860
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Dickel, J R	GSFC/Gull, T R      11-Astronomy

**NAG 5-85**      **University of Illinois, Urbana**      **2351**  
Research of mass loss from selected supergiant stars

<i>Period</i>	<i>Obligations</i>
07/01/80-01/31/82	FY81 \$6,400      TOTAL \$18,400
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lamb, S A	GSFC/Boggeess, A      11-Astronomy
Sargent, W L	

**NAG 5-132**      **University of Illinois, Urbana**      **2352**  
Tropical cyclone track and genesis forecasting

<i>Period</i>	<i>Obligations</i>
01/01/81-06/30/82	FY81 \$34,347      TOTAL \$34,347
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kidder, S Q	GSFC/Rodgers, E B      31-Atmos Sci

**NAG 5-171**      **University of Illinois, Urbana**      **2353**  
Observation of central stars of large planetary nebulae

<i>Period</i>	<i>Obligations</i>
05/01/81-04/30/82	FY81 \$4,000      TOTAL \$4,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kaler, J B	GSFC/Boggeess, A      11-Astronomy
Fowler, W B	

**NAG 8-310**      **University of Illinois, Urbana**      **2354**  
Investigation of X-ray spectra of accreting non-magnetic degenerate dwarfs

<i>Period</i>	<i>Obligations</i>
03/01/80-02/28/82	FY81      TOTAL \$6,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lamb, D Q	MSFC/Jones, J B      11-Astronomy
Mason, K O	
Brandnardi, G	

**NAG 8-317**      **University of Illinois, Urbana**      **2355**  
Surveys of old supernova remnants and study of the young supernova remnants Cassiopeia A and Tycho of the High Energy Astronomical Observatory-B guest observer proposal

<i>Period</i>	<i>Obligations</i>
02/25/80-08/24/81	FY81      TOTAL \$15,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Dickel, J R	MSFC/Jones, J B      11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**ILLINOIS (Continued)**

**NAG 8-409**                      **University of Illinois, Urbana**                      **2356**  
 To obtain a second epoch observation of Cas A  
*Period*                                      *Obligations*  
 08/03/81-07/27/82                      FY81 \$10,000                      TOTAL \$10,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Dickel, J D                      MSFC/Stone, J F                      11-Astronomy

**NAGW 207**                      **University of Illinois, Urbana**                      **2357**  
 Middle atmosphere program management  
*Period*                                      *Obligations*  
 01/01/81-12/31/81                      FY81 \$30,000                      TOTAL \$30,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Liu, C H                      HQ-SC/Mayr, H G                      45-Elec Engr  
    HQ-SC/Schmerling, E R

**NAS 3-22666**                      **University of Illinois, Urbana**                      **2358**  
 Use of a laser Doppler velocimeter in flammability tube  
*Period*                                      *Obligations*  
 01/21/81-05/05/82                      FY81 \$35,000                      TOTAL \$35,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Strehlow, R A                      LERC/Dewitt, R L                      45-Elec Engr

**NAS 5-25062**                      **University of Illinois, Urbana**                      **2359**  
 Study of antenna diffraction problems  
*Period*                                      *Obligations*  
 06/23/78-04/30/81                      FY81 \$11,000                      TOTAL \$140,229  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Mittra, R                      GSFC/Keating, T, Jr                      45-Elec Engr  
 Lee, S  
 Ko, W L

**NAS 5-26405**                      **University of Illinois, Urbana**                      **2360**  
 Design and application of parallel processors  
*Period*                                      *Obligations*  
 12/12/80-12/11/85                      FY81 \$60,000                      TOTAL \$60,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Slotnick, D L                      GSFC/Schaefer, D H                      22-Computer Science

**NAS 9-15328**                      **University of Illinois, Urbana**                      **2361**  
 Definition of Spacelab I experiment on effects of prolonged weightlessness on the humoral response in humans  
*Period*                                      *Obligations*  
 07/15/77-12/01/83                      FY81 \$11,530                      TOTAL \$59,268  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Voss, E W                      JSC/Thirolf, R G                      59-Life Sci, NEC

**NCC 1-52**                      **University of Illinois, Urbana**                      **2362**  
 Multilevel semantic analysis and problem-solving in the flight domain  
*Period*                                      *Obligations*  
 07/11/81-07/10/82                      FY81 \$100,000                      TOTAL \$100,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Chien, R T                      LARC/Hankins, W W                      29-Math Computer Sci, NEC  
    LARC/Pennington, J E

**NGR 14-005-176**                      **University of Illinois, Urbana**                      **2363**  
 Investigation of the atmosphere of Jupiter by studying the ammonia feature at a wavelength of 1.26cm  
*Period*                                      *Obligations*  
 05/22/72-06/30/82                      FY81 \$12,258                      TOTAL \$76,367  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Dickel, J R                      HQ-SL/Brunk, W E                      11-Astronomy  
    HQ-SL/Murphy, R E

**NGR 14-005-181**                      **University of Illinois, Urbana**                      **2364**  
 Rocket studies of the lower ionosphere  
*Period*                                      *Obligations*  
 08/01/71-10/30/81                      FY81 \$450,000                      TOTAL \$4,484,817  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Bowhill, S A                      WFC/Early, L J                      19-Phys Sci, NEC

**NSG 1471**                      **University of Illinois, Urbana**                      **2365**  
 Mechanisms and methodologies for the design and construction of communicating concurrent processes in real-time environments  
*Period*                                      *Obligations*  
 11/15/77-08/20/82                      FY81 \$95,997                      TOTAL \$337,419  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Campbell, R H                      LARC/Foudriat, E C                      21-Mathematics  
    LARC/Will, R H

**NSG 1547**                      **University of Illinois, Urbana**                      **2366**  
 An experimental investigation of 235UF6 fission produced plasmas  
*Period*                                      *Obligations*  
 07/01/78-12/31/81                      FY81                      TOTAL \$120,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Miley, G H                      LARC/Jalufka, N W                      13-Physics

**NSG 1609**                      **University of Illinois, Urbana**                      **2367**  
 Lasing characteristics of gas mixtures involving UF6 application to nuclear pumping of lasers  
*Period*                                      *Obligations*  
 04/15/79-04/14/82                      FY81 \$60,000                      TOTAL \$136,832  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Verdeyen, J T                      LARC/Deyoung, R J                      13-Physics  
 Eden, J G                      LARC/Jalufka, N W

**NSG 3293**                      **University of Illinois, Urbana**                      **2368**  
 The effect of a zero G environment on flammability limits as determined using a standard flammability tube apparatus  
*Period*                                      *Obligations*  
 08/21/79-08/20/80                      FY81                      TOTAL \$30,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Strehlow, R A                      LERC/Cochran, T H                      13-Physics



# **NASA'S UNIVERSITY PROGRAM** **ILLINOIS (Continued)**

**NSG 5049**                      **University of Illinois, Urbana**                      **2369**  
Effects of atmospheric refraction and turbulence on the accuracy of laser systems

<i>Period</i>	<i>Obligations</i>	
02/01/75-04/30/82	FY81 \$65,342	TOTAL \$254,422
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gardner, C S	GSFC/Abshire, J B	45-Elec Engr
Swenson, G W	GSFC/Buuton, J L	

**NSG 5213**                      **University of Illinois, Urbana**                      **2370**  
Studies of the transport of nitric oxide using AE satellite data

<i>Period</i>	<i>Obligations</i>	
10/01/77-12/31/80	FY81	TOTAL \$47,957
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sechrist, C F, Jr	GSFC/Spencer, N W	13-Physics

**NSG 5278**                      **University of Illinois, Urbana**                      **2371**  
Search for spectra of interstellar molecules against hot stars

<i>Period</i>	<i>Obligations</i>	
06/15/78-12/14/80	FY81	TOTAL \$13,513
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Snyder, L E	GSFC/Donn, B D	11-Astronomy
	GSFC/Stuef, L J	

**NSG 5294**                      **University of Illinois, Urbana**                      **2372**  
Copernicus satellite observations

<i>Period</i>	<i>Obligations</i>	
08/01/78-07/31/80	FY81	TOTAL \$6,823
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Crutcher, R M	GSFC/Kupperian, J E, Jr	11-Astronomy

**NSG 5319**                      **University of Illinois, Urbana**                      **2373**  
Theoretical studies of the solar corona, solar maximum mission

<i>Period</i>	<i>Obligations</i>	
01/15/79-01/14/82	FY81	TOTAL \$41,568
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mouschovias, T C	GSFC/Wende, C	31-Atmos Sci

**NSG 7044**                      **University of Illinois, Urbana**                      **2374**  
Evolution of the cell and the translation process

<i>Period</i>	<i>Obligations</i>	
06/01/74-05/31/82	FY81 \$96,760	TOTAL \$473,620
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Woese, C R	HQ-SB/Devincenzi, D L	12-Chemistry

**NSG 7506**                      **University of Illinois, Urbana**                      **2375**  
Studies of upper-atmosphere motions by UHF

<i>Period</i>	<i>Obligations</i>	
10/01/78-09/30/81	FY81 \$90,000	TOTAL \$246,798
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bowhill, S A	HQ-EB/Watson, R T	31-Atmos Sci
	HQ-EB/Chandra, S	

**NSG 7653**                      **University of Illinois, Urbana**                      **2376**  
Fundamental studies in theoretical X-ray astronomy

<i>Period</i>	<i>Obligations</i>	
09/01/79-09/30/81	FY81 \$130,000	TOTAL \$270,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lamb, D Q	HQ-SC/Kaluzienski, L	11-Astronomy
Lamb, F K	HQ-SC/Holt, S S	
Pethick, C J		

**NAG 1-42**                      **Western Illinois University**                      **2377**  
Research in numerical algorithms for the finite element machine

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81 \$22,001	TOTAL \$40,050
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McBride, W E	LARC/Loendorf, D D	21-Mathematics

## **INDIANA**

**NAG 5-182**                      **Indiana University - Bloomington**                      **2378**  
Studies of the ultraviolet spectra of carbon stars

<i>Period</i>	<i>Obligations</i>	
05/15/81-11/14/81	FY81 \$7,000	TOTAL \$7,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, H R	GSFC/Boggess, A	11-Astronomy
O'Brien, G T		

**NAG 5-198**                      **Indiana University - Bloomington**                      **2379**  
Quasi-simultaneous synoptic observations of selected objects in several wave-length regions

<i>Period</i>	<i>Obligations</i>	
08/01/81-07/31/82	FY81 \$1,798	TOTAL \$1,798
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kondo, Y	GSFC/Boggess, A	11-Astronomy
Mufson, S L		
Boldt, E		

**NAG 8-331**                      **Indiana University - Bloomington**                      **2380**  
Investigation of the X-ray and optical properties of S-type Markarian galaxies Simultaneous photometric and spectroscopic observations of X Persei

<i>Period</i>	<i>Obligations</i>	
02/15/80-02/15/82	FY81	TOTAL \$13,950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mufson, S L	MSFC/Jones, J B	11-Astronomy
Hutter, D J		

**NAG 8-362**                      **Indiana University - Bloomington**                      **2381**  
High Energy Astronomical Observatory-A1 observations of AM Herculis and related objects

<i>Period</i>	<i>Obligations</i>	
08/20/80-08/20/82	FY81	TOTAL \$8,532
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Durisen, R H	MSFC/Stone, J F	11-Astronomy
Imamura, J N		

# **NASA'S UNIVERSITY PROGRAM** **INDIANA (Continued)**

**NAG 8-365**                      **Indiana University - Bloomington**                      **2382**  
A search for Compton scattered X-rays in selected compact extragalactic objects

<i>Period</i>	<i>Obligations</i>	
08/20/80-08/18/82	FY81	TOTAL \$8,105
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mufson, S L	MSFC/Stone, J F	11-Astronomy

**NAG 8-396**                      **Indiana University - Bloomington**                      **2383**  
Coordinated X-ray and optical observations of Markarian 180, and the search for X-ray emission from S-type Markarian galaxies

<i>Period</i>	<i>Obligations</i>	
06/15/81-06/07/82	FY81 \$14,348	TOTAL \$14,348
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mufson, S L	MSFC/Stone, J F	11-Astronomy
Wisniewski, W Z		

**NAGW 60**                      **Indiana University - Bloomington**                      **2384**  
The role of gravity perception in the establishment of the dorsal ventral axis of the amphibian egg

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/30/82	FY81 \$37,584	TOTAL \$74,569
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Malacinski, G M	HQ-SB/Halstead, T. W	51-Biological Sci

**NAGW 98**                      **Indiana University - Bloomington**                      **2385**  
Reconnaissance and recovery of the brighter asteroids

<i>Period</i>	<i>Obligations</i>	
08/15/80-02/28/82	FY81	TOTAL \$25,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Edmondson, F K	HQ-SL/Brunk, W E.	11-Astronomy

**NAS 5-22987**                      **Indiana University - Bloomington**                      **2386**  
Digital techniques applied to surface photometry of low contrast astronomical objects

<i>Period</i>	<i>Obligations</i>	
02/11/76-12/31/80	FY81 \$1,700	TOTAL \$61,696
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Burkhead, M S	GSFC/Hobbs, R W	11-Astronomy

**NAS 8-33087**                      **Indiana University - Bloomington**                      **2387**  
Correlated ground base observations in support of the HEAO-I X-ray observatory

<i>Period</i>	<i>Obligations</i>	
06/01/78-07/26/81	FY81	TOTAL \$45,129
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mufson, S L	MSFC/Dailey, C C	11-Astronomy
Wisniewski, W Z		
Johnson, H L		

**NCA 2-335001**                      **Indiana University - Bloomington**                      **2388**  
The role of the sympathoadrenal system during exposure to heat and cold

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81 \$19,796	TOTAL \$39,482
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Elizondo, R	ARC/Greenleaf, J E	56-Medical Sciences

**NCA 2-335101**                      **Indiana University - Bloomington**                      **2389**  
The evolution of Saturn's rings due to erosion mechanisms

<i>Period</i>	<i>Obligations</i>	
06/01/81-06/01/82	FY81 \$4,000	TOTAL \$4,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Durisen, R H	ARC/Cuzzi, J N	11-Astronomy

**NGR 15-003-118**                      **Indiana University - Bloomington**                      **2390**  
Application of ultra-high sensitivity isotope ratio mass spectrometry to organic geochemistry and cosmochemistry

<i>Period</i>	<i>Obligations</i>	
06/20/72-05/31/82	FY81 \$87,000	TOTAL \$729,466
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hayes, J M	HQ-SB/Devincenzi, D L	32-Geological Sci

**NSG 7520**                      **Indiana University - Bloomington**                      **2391**  
Origin and evolution of sulfur in an Archean volcano-sedimentary sequence, north central Minnesota

<i>Period</i>	<i>Obligations</i>	
01/01/79-12/31/80	FY81	TOTAL \$29,688
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ripley, E M	HQ-SB/Devincenzi, D L	32-Geological Sci

**NSG 9072**                      **Indiana University - Bloomington**                      **2392**  
Investigation of regolith evolution through a petrographic and electronprobe analysis of soil samples

<i>Period</i>	<i>Obligations</i>	
07/14/78-10/14/81	FY81	TOTAL \$28,550
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Basu, A	JSC/McKay, D S	32-Geological Sci

**NSG 9077**                      **Indiana University - Bloomington**                      **2393**  
Characterization and evolution of Apollo 15 drill core soils, and the origin of green glass vitrophyres

<i>Period</i>	<i>Obligations</i>	
07/15/79-02/15/82	FY81 \$32,700	TOTAL \$78,700
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Basu, A	JSC/Warner, J L	32-Geological Sci

**NSG 3183**                      **Indiana Univ -Purdue U at Indianapolis**                      **2394**  
Numerical solution of the compressible boundary layer equations with viscous-inviscid interaction

<i>Period</i>	<i>Obligations</i>	
01/16/78-01/14/82	FY81 \$33,579	TOTAL \$101,818
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bodonyi, R J	LERC/Sockol, P M	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NSG 3294**      **Indiana Univ -Purdue U at Indianapolis**      **2395**  
Finite element analysis of transonic flow through a cascade of airfoils using a self-adaptive mesh

<i>Period</i>	<i>Obligations</i>	
08/01/79-10/30/82	FY81 \$147,086	TOTAL \$203,497
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ecer, A	LERC/Chima, R U	41-Aero Engr
Akay, H	LERC/Sockol, P M	

**NAG 1-58**      **Purdue University**      **2396**  
A study of method to predict and measure the transmission of sound through the walls of light aircraft

<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/82	FY81 \$26,226	TOTAL \$184,001
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Crocker, M J	LARC/Mixson, J S	41-Aero Engr

**NAG 1-116**      **Purdue University**      **2397**  
Multiple level techniques for computational fluid dynamics

<i>Period</i>	<i>Obligations</i>	
11/12/80-11/11/81	FY81 \$30,597	TOTAL \$30,597
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McCarthy, D R	LARC/Swanson, R C	41-Aero Engr

**NAG 1-157**      **Purdue University**      **2398**  
Interactive aircraft flight control and aeroelastic stabilization

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$37,812	TOTAL \$37,812
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Weisshaar, T A	LARC/Newsom, J R	41-Aero Engr

**NAG 3-17**      **Purdue University**      **2399**  
Sensor failure detection and control system accommodation

<i>Period</i>	<i>Obligations</i>	
02/01/80-03/30/82	FY81 \$49,515	TOTAL \$91,445
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Leininger, G G	LERC/Lehtinen, B	41-Aero Engr
	LERC/Merrill, W C	

**NAG 3-59**      **Purdue University**      **2400**  
Cobalt in nickel base superalloys

<i>Period</i>	<i>Obligations</i>	
05/01/80-08/31/83	FY81 \$85,914	TOTAL \$120,896
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Radavich, J F	LERC/Stephens, J R	47-Materials Engr

**NAG 3-62**      **Purdue University**      **2401**  
Water droplet dynamics in annular cascade

<i>Period</i>	<i>Obligations</i>	
04/15/80-04/13/82	FY81 \$125,384	TOTAL \$176,871
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Murthy, S N	LERC/Steinke, R J	41-Aero Engr

**NAG 3-204**      **Purdue University**      **2402**  
Dynamics performance of turbine engines with water ingestion

<i>Period</i>	<i>Obligations</i>	
08/15/81-02/15/82	FY81 \$39,682	TOTAL \$39,682
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Murthy, S N	LERC/Steinke, R J	41-Aero Engr

**NAG 4-1**      **Purdue University**      **2403**  
The integrated manual and automatic control of complex flight vehicles

<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/81	FY81 \$55,000	TOTAL \$109,502
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schmidt, D K	DFRC/Berry, D T	41-Aero Engr
	DFRC/Powers, B G	

**NAG 5-3**      **Purdue University**      **2404**  
Research on aspects of the massively parallel processor

<i>Period</i>	<i>Obligations</i>	
01/01/80-02/28/82	FY81 \$30,000	TOTAL \$63,065
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reeves, A P	GSFC/Strong, J P	45-Elec Engr
	GSFC/Schaefer, D H	

**NAG 5-101**      **Purdue University**      **2405**  
Study the effect of cloud inhomogeneity on the Earth radiation budget

<i>Period</i>	<i>Obligations</i>	
09/01/80-09/30/82	FY81 \$33,000	TOTAL \$63,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Avies, R D	GSFC/Curran, R J	31-Atmos Sci
	GSFC/King, M D	

**NAG 5-106**      **Purdue University**      **2406**  
Parameterization of cloud effects on the absorption of solar radiation

<i>Period</i>	<i>Obligations</i>	
09/15/80-11/14/82	FY81	TOTAL \$38,146
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Davies, R	GSFC/Shukla, T	31-Atmos Sci

**NAS 2-10514**      **Purdue University**      **2407**  
Influences of mechanical vibration of plant growth and development under hypogravity conditions

<i>Period</i>	<i>Obligations</i>	
01/17/80-09/30/81	FY81	TOTAL \$17,379
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mitchell, C A	ARC/Ferandin, J	51-Biological Sci
	ARC/Mancini, R	

**NAS 3-22529**      **Purdue University**      **2408**  
Investigating the measurement of thermal conductivity of synthetically grown diamond thin films

<i>Period</i>	<i>Obligations</i>	
05/01/81-11/01/81	FY81 \$5,828	TOTAL \$5,828
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Taylor, R E	LERC/Riley, T J	13-Physics

# **NASA'S UNIVERSITY PROGRAM** **INDIANA (Continued)**

**NAS 5-26196** **Purdue University** **2409**  
Develop and evaluate a performance and cost modeling capability for the NASA data management system

<i>Period</i>	<i>Obligations</i>	
06/11/80-08/17/81	FY81	TOTAL \$89,988
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Williams, T J	GSFC/Grenchik, T J	21-Mathematics
Sadowski, R P		

**NAS 5-26287** **Purdue University** **2410**  
Magsat science investigation Application of Magsat to lithospheric modeling in South America Part I Processing and interpretation of magnetic and gravity anomaly data

<i>Period</i>	<i>Obligations</i>	
09/26/80-01/25/83	FY81 \$58,342	TOTAL \$96,342
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hinze, W J	GSFC/Oseroff, H	32-Geological Sci

**NAS 5-26406** **Purdue University** **2411**  
Conference on remote sensing education

<i>Period</i>	<i>Obligations</i>	
11/14/80-09/21/81	FY81 \$40,148	TOTAL \$40,148
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Davis, S M	GSFC/Short, N M	99-Multi-Discip

**NAS 8-34009** **Purdue University** **2412**  
Utilization of satellite cloud information to diagnose the energy state and transformations in extratropical cyclones

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/84	FY81 \$50,129	TOTAL \$50,129
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, P J	MSFC/Fichtl, G H	31-Atmos Sci

**NAS 8-34303** **Purdue University** **2413**  
Investigation of the thermophysical properties of PbSnTe and HgCdTe

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$25,830	TOTAL \$25,830
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Taylor, R E	MSFC/Yates, I C.	45-Elec Engr
	MSFC/Williams, J R	

**NAS 9-15466** **Purdue University** **2414**  
Remote sensing of agriculture, Earth resources and man's environment

<i>Period</i>	<i>Obligations</i>	
12/01/77-11/30/81	FY81 \$2,267,723	TOTAL \$7,027,982
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bauer, M E	JSC/Pitts, D	39-Env Sci, NEC

**NAS 9-15889** **Purdue University** **2415**  
Evaluation of Side Looking Airborne Radar (SLAR) and simulated thematic Mapper Multi-spectral (MSS) data for forest cover mapping using computer aided analysis techniques

<i>Period</i>	<i>Obligations</i>	
05/21/79-11/30/81	FY81 \$50,000	TOTAL \$237,875
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hoffer, R M	JSC/Hatcher, N M	32-Geological Sci

**NCA 2-605001** **Purdue University** **2416**  
A study of the factors influencing the performance and morale of small research groups in isolation

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$13,000	TOTAL \$43,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Castore, C H	ARC/Patton, M	62-Social Aspects
Heslin, R		

**NCC 2-100** **Purdue University** **2417**  
Higher plant species selection criteria for a closed ecological life support system Photosynthetic and nutritional aspects

<i>Period</i>	<i>Obligations</i>	
09/01/80-10/31/81	FY81 \$85,000	TOTAL \$85,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mitchell, C A	ARC/Zill, L P	55-Agriculture Sci

**NCC 2-146** **Purdue University** **2418**  
NASA-Purdue University cooperative program in computer graphics

<i>Period</i>	<i>Obligations</i>	
09/01/81-09/30/82	FY81 \$40,000	TOTAL \$40,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, D C	ARC/Cozzolongo, J V	41-Aero Engr

**NCC 5-21** **Purdue University** **2419**  
Lithospheric models of the North American continent derived from seismic refraction and surface wave studies

<i>Period</i>	<i>Obligations</i>	
07/01/79-12/31/80	FY81	TOTAL \$41,855
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Braile, L W	GSFC/Allenby, R J	32-Geological Sci

**NGL 15-005-140** **Purdue University** **2420**  
Origin of chondrites from relationships between fourteen key trace elements

<i>Period</i>	<i>Obligations</i>	
06/21/71-02/28/82	FY81 \$73,000	TOTAL \$630,934
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lipschutz, M E	HQ-SL/French, B M	32-Geological Sci

**NSG 2192** **Purdue University** **2421**  
Joint cooperative program in computer graphics

<i>Period</i>	<i>Obligations</i>	
11/01/76-12/31/81	FY81	TOTAL \$210,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, D C	ARC/Carmichael, R L	41-Aero Engr
White, P R		
Garrett, R E		

**NSG 2401** **Purdue University** **2422**  
Plant diversity to support humans in a controlled ecology life support system ground-based demonstrator

<i>Period</i>	<i>Obligations</i>	
09/01/79-10/01/81	FY81	TOTAL \$136,314
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hoff, J E	ARC/Zill, P	59-Life Sci, NEC
Howe, J M		

**NASA'S UNIVERSITY PROGRAM  
INDIANA (Continued)**

**NSG 3071** **Purdue University** **2423**  
Gas film cooling of turbine vane surfaces  
*Period* *Obligations*  
09/01/75-10/15/80 **FY81** **TOTAL \$53,067**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
L'ecuyer, M R LERC/Stepka, F S 41-Aero Engr

**NSG 3105** **Purdue University** **2424**  
Expanding capabilities of NASA computer programs for fluid flow computations in turbomachinery  
*Period* *Obligations*  
06/01/76-09/29/81 **FY81** **TOTAL \$56,131**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Ragsdell, K M LERC/Katsanis, T 41-Aero Engr  
Thompson, H D

**NSG 3135** **Purdue University** **2425**  
Aerodynamics parameters affecting turbopropeller performance  
*Period* *Obligations*  
01/15/77-01/13/82 **FY81 \$46,765** **TOTAL \$330,133**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sullivan, J P LERC/Mitchell, G A 41-Aero Engr

**NSG 3185** **Purdue University** **2426**  
Analytical and experimental study on impact damage of laminated composites  
*Period* *Obligations*  
10/31/77-12/31/81 **FY81** **TOTAL \$150,186**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sun, C T LERC/Chamis, C C 41-Aero Engr

**NSG 3213** **Purdue University** **2427**  
Fuel sprays in high-speed air flows  
*Period* *Obligations*  
09/01/78-09/29/82 **FY81** **TOTAL \$204,665**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lefebvre, A H LERC/Bosque, M A 41-Aero Engr  
Skifstad, J G

**NSG 3258** **Purdue University** **2428**  
Atomization of broad-specification aircraft fuels  
*Period* *Obligations*  
05/15/79-05/13/82 **FY81 \$53,431** **TOTAL \$157,991**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Shifstad, J G LERC/Haggard, J B 46-Mech Engr  
Lefebvre, A H

**NSG 3285** **Purdue University** **2429**  
Three-dimensional aerodynamic turbomachines  
*Period* *Obligations*  
07/01/79-06/29/82 **FY81 \$136,212** **TOTAL \$378,781**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Fleeter, S LERC/Boldman, D R 41-Aero Engr

**NSG 3311** **Purdue University** **2430**  
Calculation of boundary layer effects in in supersonic mixed-compression inlets at angle of attack  
*Period* *Obligations*  
10/01/79-06/30/81 **FY81** **TOTAL \$57,783**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hoffman, J D LERC/Bishop, A R 41-Aero Engr

**NSG 5414** **Purdue University** **2431**  
A quantative application-oriented evaluation of thematic mapper design specifications  
*Period* *Obligations*  
10/01/79-04/30/82 **FY81 \$53,630** **TOTAL \$104,607**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Landgrebe, D A GSFC/Gordon, F 99-Multi-Discip  
Swain, P H

**NSG 7278** **Purdue University** **2432**  
Characterization and elucidation of the mechanism of mechanical stress inhibition of plant growth  
*Period* *Obligations*  
10/01/76-09/30/81 **FY81** **TOTAL \$164,476**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Mitchell, C A HQ-SB/Halstead, T W 51-Biological Sci

**NAG 2-35** **University of Notre Dame** **2433**  
Zero modules and inverse system design  
*Period* *Obligations*  
04/01/80-06/30/82 **FY81 \$15,520** **TOTAL \$30,886**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sain, M K ARC/Doolin, B F 49-Engr, NEC

**NCC 2-147** **University of Notre Dame** **2434**  
Calculations of absolute intensities of transition relevant to the photodiagnosics of combustion  
*Period* *Obligations*  
09/01/81-10/31/82 **FY81 \$65,618** **TOTAL \$65,618**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Huo, W M ARC/Jaffe, R L 12-Chemistry  
Schuler, R H

**NSG 1419** **University of Notre Dame** **2435**  
Structure of separated flow regions occurring near the leading edge of air foils including transition  
*Period* *Obligations*  
06/01/77-10/31/81 **FY81 \$37,946** **TOTAL \$147,946**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Mueller, T J LARC/Somers, D M 41-Aero Engr  
LARC/Peterson, J B

**NSG 3048** **University of Notre Dame** **2436**  
Alternatives for jet engine control  
*Period* *Obligations*  
03/01/75-09/28/82 **FY81 \$70,000** **TOTAL \$303,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sain, M K LERC/Seldner, K 45-Elec Engr

**NASA'S UNIVERSITY PROGRAM**  
**INDIANA (Continued)**

**NSG 3195**                      **University of Notre Dame**                      **2437**  
Study of aerodynamic mechanism for noise generated by  
rotor-stator interaction  
*Period*                                      *Obligations*  
05/01/78-08/30/82                      FY81 \$102,380                      TOTAL \$170,298  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Atassi, H                      LERC/Groenewga, J                      13-Physics

**IOWA**

**NAS 8-33728**                      **Drake University**                      **2438**  
Assess use and development of a computer code rotating flows  
*Period*                                      *Obligations*  
03/17/80-01/18/82                      FY81 \$25,949                      TOTAL \$46,285  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Kopicky, K J                      MSFC/Fowls, W W                      19-Phys Sci, NEC  
   MSFC/Fichtl, G H

**NAG 2-30**                      **Iowa State University**                      **2439**  
Low-speed, high-lift aerodynamics  
*Period*                                      *Obligations*  
03/01/80-10/31/82                      FY81                      TOTAL \$30,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
James, W D                      ARC/Olson, L E                      41-Aero Engr

**NAG 2-106**                      **Iowa State University**                      **2440**  
Experimental study of unsteady turbulent boundary layers  
*Period*                                      *Obligations*  
02/01/81-01/31/82                      FY81 \$25,070                      TOTAL \$25,070  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Cook, W J                      ARC/Presley, L L                      41-Aero Engr  
   ARC/Lee, G

**NAG 2-113**                      **Iowa State University**                      **2441**  
A statistical study of the progress in the search of nearby stars  
of unseen stellar and planetary companions  
*Period*                                      *Obligations*  
05/01/81-04/30/82                      FY81 \$9,000                      TOTAL \$9,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Russell, J L                      ARC/Black, D C                      11-Astronomy

**NAG 5-104**                      **Iowa State University**                      **2442**  
Energetic study of the Goddard laboratory for atmospheric  
sciences general circulation model  
*Period*                                      *Obligations*  
04/01/80-03/31/82                      FY81                      TOTAL \$50,096  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Chen, T C                      GSFC/Shukla, J                      31-Atmos Sci

**NAG 5-172**                      **Iowa State University**                      **2443**  
Radial velocity studies                      White dwarf systems  
*Period*                                      *Obligations*  
05/01/81-04/30/82                      FY81 \$1,193                      TOTAL \$1,193  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Beavers, W I                      GSFC/Bogges, A                      11-Astronomy

**NAG 8-338**                      **Iowa State University**                      **2444**  
Radio sources near COS-B Y-ray sources  
*Period*                                      *Obligations*  
03/17/80-06/30/82                      FY81                      TOTAL \$4,286  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lamb, R C                      MSFC/Jones, T B                      11-Astronomy  
Market, T H

**NAG 8-360**                      **Iowa State University**                      **2445**  
Follow-up study of CG284-1 region                      Follow-up study of CG295+0  
region                      Timing studies of X-ray sources possibly linked to X-ray  
sources  
*Period*                                      *Obligations*  
06/20/80-06/30/82                      FY81                      TOTAL \$17,948  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lamb, R C                      MSFC/Swearingen, J C                      11-Astronomy

**NAS 8-33334**                      **Iowa State University**                      **2446**  
Supernova remnants near COS-B gamma ray sources  
*Period*                                      *Obligations*  
02/13/79-04/30/81                      FY81                      TOTAL \$13,671  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lamb, R C                      MSFC/Jones, J B, Jr                      11-Astronomy

**NCA 2-340002**                      **Iowa State University**                      **2447**  
Theoretical models for the abundances of volatile materials in  
the atmospheres of the terrestrial planets and models of the  
interiors of Saturn, Uranus, and Neptune  
*Period*                                      *Obligations*  
02/01/80-01/31/82                      FY81 \$29,472                      TOTAL \$47,112  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dev, S K                      ARC/Pollack, J B                      31-Atmos Sci  
Podolak, M                      ARC/Reynolds, R T

**NCA 2-340802**                      **Iowa State University**                      **2448**  
Simulation of Martian aeolian phenomena  
*Period*                                      *Obligations*  
09/01/78-12/31/81                      FY81                      TOTAL \$23,870  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Iversen, J D                      ARC/Pollack, J B                      49-Engr, NEC

**NCC 1-17**                      **Iowa State University**                      **2449**  
Analysis of flows with shocks  
*Period*                                      *Obligations*  
10/01/79-10/31/81                      FY81                      TOTAL \$71,184  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Anderson, D A                      LARC/Salas, M D                      41-Aero Engr

**NCC 2-19**                      **Iowa State University**                      **2450**  
Wing/body interference flow investigation  
*Period*                                      *Obligations*  
07/01/79-05/31/82                      FY81                      TOTAL \$108,829  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Vogel, J M                      ARC/Corsiglia, V R                      41-Aero Engr  
James, W D  
Genalo, L J

**NASA'S UNIVERSITY PROGRAM**  
**IOWA (Continued)**

**NGR 16-002-038**      **Iowa State University**      **2451**  
 Calculation of viscous compressible flow  
*Period*      *Obligations*  
 10/07/71-07/31/82      FY81 \$31,999      TOTAL \$227,160  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Tannehill, J C      ARC/Rakich, J U      41-Aero Engr  
                                  ARC/Marvin, J G

**NGT 16-002-800**      **Iowa State University**      **2452**  
 Graduate student researchers program  
*Period*      *Obligations*  
 12/01/80-11/30/82      FY81 \$13,000      TOTAL \$22,290  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Okunshi, T H      HQ-LC/Carter, C H      46-Mech Engr

**NGT 16-002-801**      **Iowa State University**      **2453**  
 Graduate student training program in computational fluid dynamics  
*Period*      *Obligations*  
 07/01/80-12/31/81      FY81 \$100,000      TOTAL \$175,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Anderson, D A      HQ-RT/Graves, R A      41-Aero Engr

**NSG 1372**      **Iowa State University**      **2454**  
 Periodic analysis of large space structures  
*Period*      *Obligations*  
 01/01/77-09/30/82      FY81      TOTAL \$119,945  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Lewin, W      LARC/Anderson, M S      49-Engr, NEC  
                                  LARC/Pinson, L D

**NSG 1538**      **Iowa State University**      **2455**  
 Symbolic solution of linear differential equations  
*Period*      *Obligations*  
 06/01/78-12/31/81      FY81      TOTAL \$14,804  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Feinberg, R B      LARC/Shoosmith, J N      21-Mathematics

**NSG 1605**      **Iowa State University**      **2456**  
 Load deflection characteristics of inflated structures  
*Period*      *Obligations*  
 04/01/79-05/31/82      FY81 \$33,620      TOTAL \$87,771  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Baumgarten, J R      LARC/Tanner, J A      46-Mech Engr  
 Flugrad, D R

**NSG 2091**      **Iowa State University**      **2457**  
 Study of viscous cross-flow effects on cylinders at high Reynolds numbers  
*Period*      *Obligations*  
 07/01/75-12/31/82      FY81      TOTAL \$112,544  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 James, W D      ARC/Malcolm, G N      41-Aero Engr  
                                  ARC/Chapman, G T

**NSG 5339**      **Iowa State University**      **2458**  
 Research of extended-range forecasting problem blocking  
*Period*      *Obligations*  
 04/01/79-03/31/81      FY81      TOTAL \$88,350  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Chen, T      GSFC/Halem, M      31-Atmos Sci

**NAG 1-36**      **University of Iowa**      **2459**  
 Coupling of the nitrogen-oxygen X and sulfur oxygen X cycles in the troposphere  
*Period*      *Obligations*  
 02/01/80-01/31/82      FY81 \$47,541      TOTAL \$103,321  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carmichael, G R      LARC/Fishman, J      39-Env Sci, NEC  
 Peters, L K

**NAG 1-195**      **University of Iowa**      **2460**  
 Modeling of faults for validating the fault-tolerant computer systems  
*Period*      *Obligations*  
 06/01/81-05/31/82      FY81 \$38,466      TOTAL \$38,466  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Reddy, S M      LARC/Lupton, A O      22-Computer Science  
                                  LARC/Palumbo, D L

**NAG 1-215**      **University of Iowa**      **2461**  
 Design sensitivity analysis and optimization of built-up structures  
*Period*      *Obligations*  
 09/18/81-09/17/82      FY81 \$55,000      TOTAL \$55,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Haug, E J      LARC/Giles, G L      41-Aero Engr  
 Benedict, R L      LARC/Sobieski, J

**NAG 2-110**      **University of Iowa**      **2462**  
 Study of large scale mixing in developing wakes behind streamlined bodies  
*Period*      *Obligations*  
 07/01/81-06/30/82      FY81 \$51,990      TOTAL \$51,990  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Ramaprian, B R      ARC/Marvin, J G      41-Aero Engr  
                                  ARC/Brown, J L

**NAG 3-206**      **University of Iowa**      **2463**  
 Improvement of ion thruster design by reduction of wall losses  
*Period*      *Obligations*  
 09/01/81-08/31/82      FY81 \$85,986      TOTAL \$85,986  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carpenter, R T      LERC/Sovey, J S      13-Physics

**NAG 5-118**      **University of Iowa**      **2464**  
 Study of the properties of terrestrial auroral kilometeric radiation  
*Period*      *Obligations*  
 10/01/80-12/31/81      FY81 \$24,939      TOTAL \$24,939  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Baumbach, M M      GSFC/Corrigan, J P      11-Astronomy

## NASA'S UNIVERSITY PROGRAM

### IOWA (Continued)

NAG 5-153	University of Iowa	2465
A search for ducted extraordinary-mode echoes		
<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$30,000	TOTAL \$30,000
<i>Prnt Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Calvert, W	GSFC/Wende, C D	31-Atmos Sci

NAS 5-24294	University of Iowa	2472
Plasma wave experiment for the Dynamic Explorer		
<i>Period</i>	<i>Obligations</i>	
07/26/77-09/30/81	FY81 \$116,230	TOTAL \$961,009
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shawhan, S D	GSFC/Fellerman, K D	13-Physics

NAGW 190		University of Iowa		2466	
Diagnostics of laboratory beam-plasma phenomena using the OSS-1/Spacelab 2 plasma diagnostics package (PDP)					
Period		Obligations			
02/01/81-01/31/82		FY81	\$36,000	TOTAL	\$36,000
Prin Invest		NASA Tech Officer		CASE Category	
Shawhan, S D		HQ-SC/Mayr, H G		19-Phys Sci, NEC	
		HQ-SC/Schmerling, E R			

NAS 5-25530	University of Iowa	2473
Data reduction and analysis for measurements of low-energy electrons and protons in the Earth's magnetosphere and the interplanetary medium		
<i>Period</i>	<i>Obligations</i>	
10/01/79-10/31/81	FY81 \$64,588	TOTAL \$135,568
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Frank, L A	GSFC/Corrigan, J P	13-Physics

NAS 2-6553	University of Iowa	2467
Pioneer F/G data analysis-Jovian charged particles experiment		
<i>Period</i>	<i>Obligations</i>	
07/21/71-09/30/81	FY81 \$24,901	TOTAL \$957,281
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Van Allen, J A	ARC/Fimmel, R O	11-Astronomy
	ARC/Dyer, J W	

<b>NAS 5-25689</b>	<b>University of Iowa</b>	<b>2474</b>
<b>Spin scan global aurora imaging instrument experiment for Dynamics Explorer</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/10/80-07/31/83</b>	<b>FY81 \$132,000</b>	<b>TOTAL \$153,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Frank, L A</b>	<b>GSFC/Bullock, G</b>	<b>41-Aero Engr</b>

NAS 5-11279	University of Iowa	2468
Solar Wind plasma wave experiment for the Helios missions		
<i>Period</i>	<i>Obligations</i>	
03/30/70-12/31/81	FY81 \$15,000	TOTAL \$1,597,719
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gurnette, D A	GSFC/Corrigan, J P	11-Astronomy

<b>NAS 5-25690</b>	<b>University of Iowa</b>	<b>2475</b>
<b>Data analysis for plasma wave instrument Dynamics Explorer</b>		
<i>Period</i>	<i>Obligations</i>	
02/10/80-07/31/83	FY81 \$108,000	TOTAL \$127,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shawhan, S	GSFC/Bullock, G	41-Aero Engr

<b>NAS 5-20093</b>	<b>University of Iowa</b>	<b>2469</b>
<b>Plasma wave experiment for international Sun-Earth Explorer spacecraft A and B</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/20/74-09/30/81</b>	<b>FY81 \$273,947</b>	<b>TOTAL \$2,247,245</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Gurnett, D A</b>	<b>GSFC/Corrigan, J P</b>	<b>13-Physics</b>

<b>NAS 5-25999</b>	<b>University of Iowa</b>	<b>2476</b>
<b>Hardware for unified radio and plasma wave experiment</b>		
<b>International Solar Polar Mission investigation</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/31/79-09/30/83</b>	<b>FY81 \$167,200</b>	<b>TOTAL \$449,200</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Gurnett, D A</b>	<b>GSFC/Stone, R G</b>	<b>11-Astronomy</b>
	<b>GSFC/Davis, M</b>	

<b>NAS 5-20094</b>	<b>University of Iowa</b>	<b>2470</b>
<b>Magnetospheric and interplanetary plasma for international Sun-Earth Explorer mother and daughter spacecraft</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/20/74-06/30/80</b>	<b>FY81</b>	<b>TOTAL \$1,439,600</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Frank, L A</b>	<b>GSFC/Wales, B</b>	<b>13-Physics</b>

<b>NAS 5-26125</b>	<b>University of Iowa</b>	<b>2477</b>
<b>Interplanetary monitoring platform-J data reduction and analysis</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/80-03/31/82</b>	<b>FY81 \$31,479</b>	<b>TOTAL \$60,590</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Gurnett, D A</b>	<b>GSFC/Corngan, J P</b>	<b>11-Astronomy</b>

<b>NAS 5-24293</b>	<b>University of Iowa</b>	<b>2471</b>
<b>Global auroral imaging at visable and ultraviolet wavelengths for the Dynamic Explorer</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/26/77-08/31/83</b>	<b>FY81 \$259,932</b>	<b>TOTAL \$1,224,195</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Frank, L. A</b>	<b>GSFC/Fellerman, K D</b>	<b>13-Physics</b>

NAS 5-26257		University of Iowa	2478
International Sun Earth Explorer A and B data reduction and analysis			
<i>Period</i>	<i>Obligations</i>		
07/01/80-11/30/82	FY81 \$317,000	TOTAL	\$474,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Frank, L A	GSEC/Cornnan, J P	31-Atmos Sc	



# **NASA'S UNIVERSITY PROGRAM** **IOWA (Continued)**

**NAS 5-26425**                      **University of Iowa**                      **2479**  
Use of Magsat anomaly data for crustal structure and mineral resources in the U S midcontinent

<i>Period</i>	<i>Obligations</i>	
12/03/80-04/03/83	FY81 \$57,000	TOTAL \$57,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Carmichael, R S	GSFC/Oseroff, H	32-Geological Sci
Anderson, R R		
Clark, K F		

**NAS 8-32807**                      **University of Iowa**                      **2480**  
Definition of instruments for an ejectable plasma diagnostics package for Spacelab 2 mission

<i>Period</i>	<i>Obligations</i>	
10/03/77-05/31/84	FY81 \$526,048	TOTAL \$3,266,579
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shawhan, S D	MSFC/Guynes, B V	31-Atmos Sci
	MSFC/Ise, R	

**NAS 8-33770**                      **University of Iowa**                      **2481**  
Research study entitled 'A recoverable plasma diagnostics package for Spacelab'

<i>Period</i>	<i>Obligations</i>	
07/25/80-12/31/83	FY81 \$554,963	TOTAL \$1,143,562
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shawhan, S	MSFC/Guynes, B V	13-Physics
	MSFC/Ise, R	

**NGL 16-001-002**                      **University of Iowa**                      **2482**  
Theoretical and experimental studies related to particles and fields associated with major bodies of solar system and with interplanetary space

<i>Period</i>	<i>Obligations</i>	
05/23/62-11/30/82	FY81 \$100,000	TOTAL \$5,640,196
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Van Allen, J A	HQ-SC/Mayr, H G	13-Physics
	HQ-SC/Schmerling, E R	

**NGL 16-001-043**                      **University of Iowa**                      **2483**  
Waves in plasmas

<i>Period</i>	<i>Obligations</i>	
03/28/67-11/30/81	FY81 \$97,316	TOTAL \$1,237,302
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gurnett, D A	HQ-SC/Mayr, H G	13-Physics
	HQ-SC/Schmerling, E R	

**NSG 1499**                      **University of Iowa**                      **2484**  
Effects of misalignment on mechanical behavior of metals in creep

<i>Period</i>	<i>Obligations</i>	
03/01/78-06/30/81	FY81	TOTAL \$53,508
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wu, H C	LARC/Rummler, D R	47-Materials Engr

**NSG 3305**                      **University of Iowa**                      **2485**  
Development of finite differential method for internal computational fluid mechanics

<i>Period</i>	<i>Obligations</i>	
09/01/79-08/29/82	FY81 \$51,209	TOTAL \$136,459
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chen, C J	LERC/Johnson, G M	41-Aero Engr

**NSG 7471**                      **University of Iowa**                      **2486**  
Experiments on spin-aligned atoms

<i>Period</i>	<i>Obligations</i>	
07/01/78-06/30/81	FY81	TOTAL \$188,701
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stwalley, W C	HQ-RT/Blue, J W	13-Physics

**NSG 7632**                      **University of Iowa**                      **2487**  
Investigation of charged particle acceleration mechanisms in space plasmas

<i>Period</i>	<i>Obligations</i>	
07/01/79-10/31/81	FY81 \$65,000	TOTAL \$121,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Joyce, G	HQ-SC/Mayr, H G	19-Phys Sci, NEC
	HQ-SC/Schmerling, E R	

**NSG 9060**                      **University of Iowa**                      **2488**  
Neurocirculatory control mechanisms in humans Role of cardiopulmonary baroreceptors

<i>Period</i>	<i>Obligations</i>	
08/01/77-07/31/80	FY81	TOTAL \$80,688
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Abboud, F M	JSC/Hull, W E	56-Medical Sciences

## **KANSAS**

**NAS 9-14899**                      **Kansas State University**                      **2489**  
Estimated winter wheat yield from crop growth predicted by LANDSAT

<i>Period</i>	<i>Obligations</i>	
03/15/76-10/31/81	FY81 \$305,000	TOTAL \$524,734
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kanemasu, E T	JSC/Pitts, D E	31-Atmos Sci
	JSC/Thompson, D R	

**NGL 17-001-026**                      **Kansas State University**                      **2490**  
Infrared laboratory studies of synthetic planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
01/10/67-11/30/79	FY81	TOTAL \$264,943
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Williams, D	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Mitz, M A	

### NASA'S UNIVERSITY PROGRAM KANSAS (Continued)

NSG 7580	Kansas State University	2491
Geology of Libyan desert grass site, S W Egypt		
<i>Period</i>	<i>Obligations</i>	
03/01/79-06/30/81	FY81	TOTAL \$2,298
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Underwood, J R, Jr	HQ-SL/Quede, W L	32-Geological Sc

<b>NAG 3-11</b>	<b>University of Kansas</b>	<b>2498</b>
<b>Dynamic distortion analysis technology study</b>		
<i>Period</i>	<i>Obligations</i>	
<b>11/15/79-11/13/81</b>	<b>FY81</b>	<b>TOTAL \$62,031</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Schweikhard, W G</b>	<b>LERC/Neumann, H E</b>	<b>41-Aero Engr</b>

<b>NSG 7613</b>	<b>Kansas State University</b>	<b>2492</b>
<b>Northern plains of Mars</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/79-05/30/82	FY81 \$18,253	TOTAL \$53,637
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Underwood, J R , Jr	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

NAG 3-32	University of Kansas	2499
Static and dynamic non linear analysis with substructure models		
<i>Period</i>	<i>Obligations</i>	
03/01/80-05/29/82	FY81 \$30,197	TOTAL \$55,560
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dodds, R H	LERC/Hirschbein, M S	46-Mech Engr
	LERC/Chamis, C C	

NAG 1-75		University of Kansas	2493
Development of unsteady suction analogy			
<i>Period</i>		<i>Obligations</i>	
06/16/80-06/15/82	FY81	\$26,990	TOTAL \$53,472
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Lan, C E	LARC/Frnk, N T		41-Aero Engr

NAG 3-71		University of Kansas		2500
An assessment of general aviation deicing systems on contemporary airfoils				
Period		Obligations		
05/01/80-01/29/82	FY81	\$55,626	TOTAL	\$100,560
Prin Invest	NASA Tech	Officer	CASE Category	
Kohlman, D L	LERC/Shaw, R J		41-Aero Engr	
Schweikhard, W	LERC/Reinmann, J J			

NAG 1-117		University of Kansas		2494	
Development of algorithms for wind direction ambiguity removal					
<i>Period</i>		<i>Obligations</i>			
01/01/81-12/31/81		FY81	\$39,471	TOTAL	\$39,471
<i>Prn</i>	<i>Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Shanmugam, K	S	LARC/Schroeder, L	C		
		LARC/Jones, W	L	33-Oceanography	

<b>NAG 3-85</b>	<b>University of Kansas</b>	<b>2501</b>
Study and design of approaches for simultaneous multi axis thrust measurements of air breathing jet engines		
<i>Period</i>	<i>Obligations</i>	
07/07/80-12/21/81	FY81 \$13,747	TOTAL \$19,080
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schweikhard, W G	LERC/Straight, D M	46-Mech Engr
	LERC/Grey, R E	

<b>NAG 1-134</b>	<b>University of Kansas</b>	<b>2495</b>
<b>A theoretical investigation of wing rocking</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$30,803	TOTAL \$30,803
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lan, C E	LARC/Gilbert, W P	41-Aero Engr
	LARC/Yip, L P	

<b>NAG 3-150</b>	<b>University of Kansas</b>	<b>2502</b>
Evaluating performance and developing additional applications for an adaptive multibeam phased array communication system		
<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$25,409	TOTAL \$25,409
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Biggs, A W	LERC/Smetana, J	45-Elec Engr

<b>NAG 1-147</b>	<b>University of Kansas</b>	<b>2496</b>
<b>Effects of supersonic prop-fan velocities on acoustic structural fatigue</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/01/81-03/31/82</b>	<b>FY81 \$15,919</b>	<b>TOTAL \$15,919</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Smith, H W</b>	<b>LARC/Childress, O S</b>	<b>49-Engr, NEC</b>
<b>Davidson, J P</b>	<b>LARC/Mayes, W H</b>	

<b>NAG 4-5</b>	<b>University of Kansas</b>	<b>2503</b>
A program to evaluate a control system based on feedback of aerodynamic pressure differentials		
<i>Period</i>	<i>Obligations</i>	
<b>08/25/80-08/24/81</b>	<b>FY81</b>	<b>TOTAL \$40,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Roskam, R J</b>	<b>DFRC/Black, J M</b>	<b>41-Aero Engr</b>
	<b>DFRC/Gera, J</b>	

<b>NAG 1-205</b>	<b>University of Kansas</b>	<b>2497</b>
<b>Study of advanced commuter configurations</b>		
<i>Period</i>	<i>Obligations</i>	
08/15/81-08/14/82	FY81 \$84,998	TOTAL \$84,998
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Roskam, J	LARC/Jernell, L S	41-Aero Engr
	LARC/Johnson, J L, Jr	

<b>NAG 4-8</b>	<b>University of Kansas</b>	<b>2504</b>
<b>Investigation of the internal and external aerodynamics of cattle trucks</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/81-06/30/82</b>	<b>FY81 \$19,825</b>	<b>TOTAL \$19,825</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Muirhead, V U</b>	<b>DFRC/Saltzman, E J</b>	<b>49-Engr. NEC</b>

**NASA'S UNIVERSITY PROGRAM**  
**KANSAS (Continued)**

**NAG 5-30**                      **University of Kansas**                      **2505**  
 Measurement of soil using remote sensing active microwave techniques  
*Period*                                      *Obligations*  
 03/01/80-12/31/81                      FY81 \$300,000                      TOTAL \$425,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Ulaby, F T                      GSFC/Schmugge, T                      39-Env Sci, NEC  
 Bradley, G A                      GSFC/Rango, A

**NAG 5-163**                      **University of Kansas**                      **2506**  
 Investigation of the radar response to snowpack properties  
*Period*                                      *Obligations*  
 04/15/81-04/14/82                      FY81 \$60,000                      TOTAL \$60,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Ulaby, F T                      GSFC/Chang, A T                      32-Geological Sci

**NAGW 71**                      **University of Kansas**                      **2507**  
 The magnetic field of Jupiter  
*Period*                                      *Obligations*  
 06/01/80-05/31/81                      FY81                      TOTAL \$21,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Beard, D B                      HQ-SC/Hedin, A E                      19-Phys Sci, NEC  
    HQ-SC/Schmerling, E R

**NAGW 187**                      **University of Kansas**                      **2508**  
 Cometary atmospheres  
*Period*                                      *Obligations*  
 06/01/81-05/30/82                      FY81 \$22,000                      TOTAL \$22,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Beard, D B                      HQ-SC/Mayr, H G                      19-Phys Sci, NEC  
    HQ-SC/Schmerling, E R

**NAGW 217**                      **University of Kansas**                      **2509**  
 To model the magnetic field of Jupiter  
*Period*                                      *Obligations*  
 06/01/81-05/31/82                      FY81 \$20,000                      TOTAL \$20,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Beard, D B                      HQ-SC/Wayr, H G                      19-Phys Sci, NEC  
    HQ-SC/Schmerling, E R

**NAS 1-15770**                      **University of Kansas**                      **2510**  
 Feasibility study for advanced technology integration for general aviation  
*Period*                                      *Obligations*  
 04/10/79-07/09/80                      FY81                      TOTAL \$81,985  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Roskam, J                      LARC/Holmes, B J                      41-Aero Engr  
 Kohlman, D L

**NAS 1-16255**                      **University of Kansas**                      **2511**  
 General aviation autopilot study  
*Period*                                      *Obligations*  
 06/26/80-12/10/80                      FY81                      TOTAL \$10,036  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Roskam, J                      LARC/Downing, D R                      41-Aero Engr

**NAS 1-16363**                      **University of Kansas**                      **2512**  
 Design study of technology requirements for high performance single-propeller-driven business airplanes  
*Period*                                      *Obligations*  
 08/26/80-12/10/81                      FY81                      TOTAL \$112,165  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Kohlman, D L                      LARC/Holmes, B J                      41-Aero Engr  
 Roskam, J

**NAS 9-15421**                      **University of Kansas**                      **2513**  
 Radar measurements in agricultural applications  
*Period*                                      *Obligations*  
 10/01/77-11/30/81                      FY81 \$110,000                      TOTAL \$437,620  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Ulaby, F T                      JSC/Paris, J F                      31-Atmos Sci

**NAS 9-16419**                      **University of Kansas**                      **2514**  
 Study simulation of spaceborne microwave soil moisture sensing  
*Period*                                      *Obligations*  
 08/19/81-02/15/82                      FY81 \$49,950                      TOTAL \$49,950  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Ulaby, F T                      JSC/Paris, J F                      32-Geological Sci

**NASW 3438**                      **University of Kansas**                      **2515**  
 Creation of an experimental technical transfer project  
*Period*                                      *Obligations*  
 01/07/81-01/06/83                      FY81 \$97,567                      TOTAL \$97,567  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Barr, B G                      HQ-ET/Ault, L A                      46-Mech Engr  
    HQ-ET/Voris, R M

**NAS13-131**                      **University of Kansas**                      **2516**  
 Conduct short courses in remote sensing  
*Period*                                      *Obligations*  
 10/26/79-10/25/80                      FY81                      TOTAL \$25,011  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Martino, E A                      NSTL/Atwell, B H                      32-Geological Sci  
 Williams, T H

**NAS13-166**                      **University of Kansas**                      **2517**  
 Developing and teaching short courses in state-of-the-art remote sensing techniques  
*Period*                                      *Obligations*  
 11/04/80-11/03/81                      FY81 \$17,137                      TOTAL \$17,137  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Martinko, E A                      NSTL/Atwell, B H                      32-Geological Sci  
 Williams, T H

**NCC 1-6**                      **University of Kansas**                      **2518**  
 A research program to reduce interior noise in general aviation airplanes  
*Period*                                      *Obligations*  
 05/01/79-04/30/82                      FY81 \$42,067                      TOTAL \$200,002  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Roskam, J                      LARC/Stephens, D G                      41-Aero Engr  
 Unz, H

**NASA'S UNIVERSITY PROGRAM**  
**KANSAS (Continued)**

**NCC 1-18**                      **University of Kansas**                      **2519**  
Investigation of optimum wing configurations with edge separation

<i>Period</i>	<i>Obligations</i>	
06/15/79-12/31/81	FY81	TOTAL \$47,917
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lan, C E	LARC/Campbell, J F	41-Aero Engr

**NCC 1-51**                      **University of Kansas**                      **2520**  
C-band measurements of radar backscatter from ice

<i>Period</i>	<i>Obligations</i>	
03/15/81-03/14/82	FY81 \$77,037	TOTAL \$77,037
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Onstott, R G	LARC/Jones, W L	39-Env Sci, NEC
Moore, R K	LARC/Swift, C T	

**NCC 2-92**                      **University of Kansas**                      **2521**  
Investigation of variable camber devices for helicopter rotor systems

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/30/82	FY81	TOTAL \$59,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zerwekh, R	ARC/Stroub, R H	41-Aero Engr

**NCC 2-107**                      **University of Kansas**                      **2522**  
Development of methodology for computer aided design and manufacture of wind tunnel model components

<i>Period</i>	<i>Obligations</i>	
12/15/80-07/31/82	FY81 \$41,000	TOTAL \$41,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schweikhard, W	ARC/Cozzolongo, J V	41-Aero Engr

**NCC 2-110**                      **University of Kansas**                      **2523**  
Calibration laboratory developments for propulsion simulators

<i>Period</i>	<i>Obligations</i>	
12/15/80-09/30/83	FY81 \$82,500	TOTAL \$82,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schweikhard, W	ARC/Harper, M	41-Aero Engr
	ARC/Bailey, R O	

**NCC 2-112**                      **University of Kansas**                      **2524**  
Investigation of the performance improvements with the free-tip rotor on helicopters

<i>Period</i>	<i>Obligations</i>	
12/01/80-12/31/81	FY81 \$29,911	TOTAL \$29,911
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Roskam, J	ARC/Stroub, R H	41-Aero Engr
	ARC/Johnson, W	

**NCC 4-3**                      **University of Kansas**                      **2525**  
Graduate research in aeronautical flight test techniques

<i>Period</i>	<i>Obligations</i>	
12/15/80-12/14/81	FY81 \$64,451	TOTAL \$64,451
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schweikhard, W	DFRC/Kordes, E E	41-Aero Engr
McAtee, T M		

**NGL 17-004-024**                      **University of Kansas**                      **2526**  
Research on the applications of satellite remote sensing

<i>Period</i>	<i>Obligations</i>	
04/06/72-03/03/84	FY81 \$125,000	TOTAL \$1,200,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Barr, B G	HQ-ET/Vitale, J A	39-Env Sci, NEC

**NSG 1397**                      **University of Kansas**                      **2527**  
Remote sensing of oceans

<i>Period</i>	<i>Obligations</i>	
02/15/77-12/31/81	FY81 \$9,951	TOTAL \$212,099
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Moore, R K	LARC/Schroeder, L C	33-Oceanography
Fung, A K		

**NSG 1629**                      **University of Kansas**                      **2528**  
An investigation of vortex induced aerodynamic characteristics of supersonic cruise configurations

<i>Period</i>	<i>Obligations</i>	
06/16/79-12/31/81	FY81	TOTAL \$45,724
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lan, C E	LARC/Lamar, J E	41-Aero Engr
	LARC/Polhamu, E C	

**NSG 1633**                      **University of Kansas**                      **2529**  
Analysis of performance and handling qualities considerations for wake modification devices on agricultural aircraft

<i>Period</i>	<i>Obligations</i>	
09/01/79-10/31/81	FY81	TOTAL \$55,430
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lenzen, K	LARC/Holmes, B J	41-Aero Engr

**NSG 3290**                      **University of Kansas**                      **2530**  
Self consistent numerical simulation of plasma insulator interactions in space

<i>Period</i>	<i>Obligations</i>	
08/16/79-08/13/82	FY81 \$59,864	TOTAL \$133,558
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Enoch, J	LERC/Purvis, C K	13-Physics
Armstrong, T P	LERC/Stevens, N J	
Wiseman, G G		

**NSG 4008**                      **University of Kansas**                      **2531**  
Analysis of structural components for ultra high speed aircraft

<i>Period</i>	<i>Obligations</i>	
05/01/76-04/30/81	FY81	TOTAL \$40,416
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lenzen, K H	DFRC/Jenkins, J M	41-Aero Engr

**NSG 4019**                      **University of Kansas**                      **2532**  
Study of new flight test techniques

<i>Period</i>	<i>Obligations</i>	
01/22/79-03/31/82	FY81 \$64,088	TOTAL \$205,610
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Roskam, J	DFRC/Kordes, E E	41-Aero Engr
	DFRC/Matheny, N W	

### NASA'S UNIVERSITY PROGRAM KANSAS (Continued)

NSG 4023	University of Kansas	2533
Drag reduction/delivery truck		
<i>Period</i>	<i>Obligations</i>	
07/01/79-06/30/81	FY81	TOTAL \$11,934
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Muirhead, V U	DFRC/Saltzman, E J	49-Engr, NEC

<b>NSG 4026</b>	<b>University of Kansas</b>	<b>2534</b>
<b>A system study for the application of distributed processors to flight testing techniques</b>		
<i>Period</i>	<i>Obligations</i>	
07/01/79-06/30/82	FY81 \$69,884	TOTAL \$165,696
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kelley, G L	DFRC/Abbott, L W	45-Elec Engr
	DFRC/Myers, A F	

NSG 5335	University of Kansas	2535
Active microwave investigation of snow hydrology		
<i>Period</i>	<i>Obligations</i>	
02/01/79-01/14/81	FY81	TOTAL \$219,978
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ulaby, F T	GSFC/Chang, A T	32-Geological Sci

<b>NAG 1-114</b>	<b>Wichita State University</b>	<b>2536</b>
<b>Theoretical and experimental studies of three dimensional flow interference and drag on general aviation aircraft</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/81-01/31/82	FY81 \$84,435	TOTAL \$84,435
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wentz, W H	LARC/Holmes, B J	41-Aero Engr
	LARC/McGhee, R J	

<b>NCC 1-31</b>	<b>Wichita State University</b>	<b>2537</b>
<b>Research in engine nozzle design for a hypersonic flight vehicle</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/80-01/31/82	FY81 - \$29,471	TOTAL \$58,173
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zumwalt, G W	LARC/Weidner, J P	41-Aero Engr
	LARC/Watts, J D	

NSG 1575	Wichita State University	2538
Supersonic burning in separated flow regions		
<i>Period</i>	<i>Obligations</i>	
11/01/78-10/31/81	FY81 \$14,369	TOTAL \$70,411
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zumwalt, G W	LARC/Rogers, R C	41-Aero Engr

<b>NSG 3186</b>	<b>Wichita State University</b>	<b>2539</b>
<b>Numerical modeling of magnetohydrodynamic channel flow</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/78-08/14/81</b>	<b>FY81 \$16,885</b>	<b>TOTAL \$58,201</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Greywall, M S</b>	<b>LERC/Smith, J M</b>	<b>21-Mathematics</b>
	<b>LERC/Juhasz, A J</b>	

NSG 3277	Wichita State University	2540
Feasibility studies of spoiler and aileron control systems for large wind turbine		
Period	Obligations	
06/01/79-03/31/82	FY81 \$130,496	TOTAL \$246,460
Prin Invest	NASA Tech Officer	CASE Category
Wentz, W H, Jr	LERC/Miller, D R	41-Aero Engr
Snyder, M H		

## KENTUCKY

NAG10-5		Kentucky State University		2541
Conclusion of study entitled zoological effects of variations in atmospheric oxygen levels				
Period			Obligations	
09/29/81-09/28/82	FY81	\$40,533	TOTAL	\$40,533
<i>Prin Invest</i>	<i>NASA Tech Officer</i>			<i>CASE Category</i>
Kloek, G P	KSC/Hoffler, G N		59-Life Sci, NEC	

<b>NSG 801</b>	<b>Kentucky State University</b>	<b>2542</b>
<b>Zoological effects of variations in atmospheric oxygen levels</b>		
<i>Period</i>	<i>Obligations</i>	
02/27/74-04/28/81	FY81	TOTAL \$265,029
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kloek, G	KSC/Hoffler, G W	59-Life Sci, NEC

NAS 9-16254		Murray State University - Ky		2543
Development of a spectroscopic method for excited molecules produced by atom recombination on shuttle tile coatings				
Period			Obligations	
10/01/80-09/30/81		FY81	\$9,082	TOTAL \$9,082
Prin Invest		NASA Tech Officer		CASE Category
Owen, D A		JSC/Scott, C D		11-Astronmv

NAS13-111		Murray State University - Ky	2544
Conduct short courses in remote sensing			
Period		Obligations	
04/02/79-04/02/81	FY81	TOTAL	\$24,231
Prin Invest	NASA Tech Officer	CASE Category	
Weber, N	NSTL/Atwell, B H	31-Atmos Sci	

NAS13-177		Murray State University - Ky		2545
Conduct short course in remote sensing for state government officials				
<i>Period</i>		<i>Obligations</i>		
05/01/81-12/31/81	Prin Invest	FY81	\$15,000	TOTAL \$15,000
Webster, N N		NASA Tech Officer		CASE Category
		NSTL/Patterson, F A	32-Geological Sci	

NAS 9-15452	University of Kentucky	2546
Development of limb volume measuring system		
<i>Period</i>	<i>Obligations</i>	
11/01/77-04/30/82	FY81 \$85,000	TOTAL \$198,054
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bhagat, P K	JSC/Booher, C R	56-Medical Sciences

**NASA'S UNIVERSITY PROGRAM**  
**KENTUCKY (Continued)**

**NAS 9-16034**                      **University of Kentucky**                      **2547**  
Lower limb volume measurements in space using an ultrasonic technique  
*Period*                                      *Obligations*  
01/17/80-01/31/82                      FY81                      TOTAL \$31,940  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bhagot, P K                      JSC/Peck, E E                      59-Life Sci, NEC

**NAS 9-16045**                      **University of Kentucky**                      **2548**  
Prevention of space flight deconditioning by application of whole body oscillating accelerator  
*Period*                                      *Obligations*  
01/17/80-05/31/84                      FY81 \$6,571                      TOTAL \$43,696  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bhattacharga, A                      JSC/Peck, E E                      59-Life Sci, NEC

**NASW 3039**                      **University of Kentucky**                      **2549**  
Operation of a state technical application program  
*Period*                                      *Obligations*  
02/01/77-08/31/80                      FY81                      TOTAL \$491,558  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Unavailable                      HQ-ET/Dolby, W                      99-Multi-Discip

**NASW 3367**                      **University of Kentucky**                      **2550**  
Operation of a technology applications program (TAP)  
*Period*                                      *Obligations*  
07/01/80-06/30/82                      FY81 \$75,000                      TOTAL \$259,934  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hackbarth, M                      HQ-ET/Harrison, J O  
22-Computer Science

**NSG 1424**                      **University of Kentucky**                      **2551**  
A model for methane and carbon monoxide incorporating a time-varying wind field and tropopause height  
*Period*                                      *Obligations*  
07/01/77-06/30/82                      FY81 \$37,580                      TOTAL \$123,648  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Peters, L K                      LARC/Reichle, H G , Jr                      31-Atmos Sci

**NSG 1501**                      **University of Kentucky**                      **2552**  
An algorithm to generate input data from meteorological and Space Shuttle observations to validate a CH4-CO model  
*Period*                                      *Obligations*  
02/01/78-10/31/80                      FY81                      TOTAL \$69,197  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Peters, L K                      LARC/Reichle, H G , Jr                      31-Atmos Sci  
Yamanis, J

**NSG 2318**                      **University of Kentucky**                      **2553**  
Dynamically imposed oscillating forces for preventing cardiovascular deconditioning  
*Period*                                      *Obligations*  
05/01/78-11/30/81                      FY81                      TOTAL \$166,651  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Knapp, C F                      ARC/Sandler, H                      56-Medical Sciences  
Bhattacharya, A

**NSG 3114**                      **University of Kentucky**                      **2554**  
Study effects of buoyancy on flame spreading across beds of solid fuel  
*Period*                                      *Obligations*  
07/01/76-12/31/81                      FY81                      TOTAL \$155,234  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Altenkirch, R A                      LERC/Cochran, T H                      46-Mech Engr  
Eichhorn, R

**NAGW 70**                      **University of Louisville**                      **2555**  
Space biology research project  
*Period*                                      *Obligations*  
06/01/80-05/31/82                      FY81 \$200,000                      TOTAL \$397,714  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Musacchia, X J                      HQ-SB/Halstead, T W                      51-Biological Sci

**NAS 2-10510**                      **University of Louisville**                      **2556**  
Life sciences flight experiment Renal and musculo-skeletal responses to weightlessness and readaptation to normal gravitation forces in rats  
*Period*                                      *Obligations*  
01/17/80-09/30/81                      FY81 \$26,784                      TOTAL \$33,195  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Musacchia, X J                      ARC/Ferandin, J A                      51-Biological Sci  
ARC/Polson, P

**NAS 5-26504**                      **University of Louisville**                      **2557**  
Noss computer performance studies  
*Period*                                      *Obligations*  
02/23/81-03/22/82                      FY81 \$61,897                      TOTAL \$61,897  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Shelton, R D                      GSFC/Isley, W                      22-Computer Science

**NAS 8-31233**                      **University of Louisville**                      **2558**  
Turbopump technology improvements via transient rotordynamics analysis  
*Period*                                      *Obligations*  
11/14/74-07/31/80                      FY81                      TOTAL \$162,724  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Childs, D W                      MSFC/Winder, S W                      42-Astro Engr  
MSFC/Goetz, O K

**NCA 2-400101**                      **University of Louisville**                      **2559**  
Effect of simulated space flight on interferon production and action  
*Period*                                      *Obligations*  
11/01/80-10/31/82                      FY81 \$20,000                      TOTAL \$20,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Sonnenfeld, G                      ARC/Mandel, A D                      51-Biological Sci  
ARC/Holton, E R

# **NASA'S UNIVERSITY PROGRAM** **KENTUCKY (Continued)**

**NSG 2325**                      **University of Louisville**                      **2560**  
 Renal function, water and electrolyte balance and intestinal  
 transport in hypokinetic animals  
*Period*    *Obligations*  
 06/01/78-10/31/81                      FY81 \$40,000                      TOTAL \$129,768  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Musacchia, X J                      ARC/Holton, E M                      51-Biological Sci  
 Steffen, J

**NSG 3200**                      **University of Louisville**                      **2561**  
 Dynamic seal testing and analysis for turbopump rotor dynamic  
 stability and synchronous response technology improvements  
*Period*    *Obligations*  
 06/01/78-09/30/81                      FY81 \$5,007                      TOTAL \$139,999  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Dressman, J B                      LERC/Hendricks, R C                      46-Mech Engr

**NAS 8-33387**                      **Western Kentucky University**                      **2562**  
 MSFC solar heating and cooling high speed performance  
 (HISPER) code validation  
*Period*    *Obligations*  
 07/02/79-01/01/80                      FY81                      TOTAL \$8,460  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Healy, H                      MSFC/Stonemetz, R E                      31-Atmos Sci  
    MSFC/Elkins, R F

**NAS 8-34424**                      **Western Kentucky University**                      **2563**  
 Ray tracing of Jovian low frequency radiation  
*Period*    *Obligations*  
 07/10/81-10/30/81                      FY81 \$19,917                      TOTAL \$19,917  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Six, N F                      MSFC/Green, J L                      31-Atmos Sci  
    MSFC/Chappell, R

**NSG 5238**                      **Western Kentucky University**                      **2564**  
 Ultraviolet observations of high excitation planetary nebulae  
*Period*    *Obligations*  
 02/15/78-08/15/82                      FY81 \$9,695                      TOTAL \$41,508  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Hackney, K R                      GSFC/Bogges, A                      11-Astronomy  
 Hackney, R L  
 Kondo, Y

## **LOUISIANA**

**NAG 8-2**                      **Grambling State University**                      **2565**  
 Turbulence in transient solar phenomena  
*Period*    *Obligations*  
 01/04/80-04/01/82                      FY81 \$34,983                      TOTAL \$68,822  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Cross, M A                      MSFC/Hanssen, F A                      13-Physics  
 Johnson, J A                      MSFC/Kent, M I

**NAG 5-13**                      **Louisiana State University - Baton Rouge**                      **2566**  
 The rotation and internal fluid dynamics of the Sun  
*Period*    *Obligations*  
 02/01/80-01/14/82                      FY81 \$26,000                      TOTAL \$42,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Endal, A S                      GSFC/Sofia, S                      11-Astronomy

**NAG 5-71**                      **Louisiana State University - Baton Rouge**                      **2567**  
 Ultraviolet spectroscopy of selected astronomical sources  
*Period*    *Obligations*  
 07/01/80-11/30/81                      FY81 \$6,500                      TOTAL \$18,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Drilling, J S                      GSFC/Bogges, A                      11-Astronomy

**NAG 5-197**                      **Louisiana State University - Baton Rouge**                      **2568**  
 Search for cataclysmic binaries continuing strongly magnetic white  
 dwarfs  
*Period*    *Obligations*  
 07/01/81-06/30/82                      FY81 \$14,900                      TOTAL \$14,900  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Bond, H E                      GSFC/Bogges, A                      11-Astronomy

**NAGW 48**                      **Louisiana State University - Baton Rouge**                      **2569**  
 Electron positive ion interaction  
*Period*    *Obligations*  
 04/01/80-03/31/82                      FY81 \$33,500                      TOTAL \$80,700  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Henry, J W                      HQ-SL/Murphy, R E                      31-Atmos Sci  
    HQ-SL/Brunk, W E

**NAS13-142**                      **Louisiana State University - Baton Rouge**                      **2570**  
 Conduct short courses in remote sensing  
*Period*    *Obligations*  
 02/01/80-02/01/81                      FY81                      TOTAL \$25,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Whitehurst, C A                      NSTL/Atwell, B H                      32-Geological Sci

**NAS13-148**                      **Louisiana State University - Baton Rouge**                      **2571**  
 Technology transfer to sub-state levels of government  
*Period*    *Obligations*  
 05/01/80-12/31/81                      FY81 \$75,000                      TOTAL \$125,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Whitehurst, C A                      NSTL/Ivey, J H                      32-Geological Sci

**NGT 19-001-800**                      **Louisiana State University - Baton Rouge**                      **2572**  
 Graduate student researchers program  
*Period*    *Obligations*  
 09/01/80-08/31/82                      FY81 \$12,750                      TOTAL \$24,180  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Rouse, L J                      HQ-LC/Carter, C H                      33-Oceanography

**NASA'S UNIVERSITY PROGRAM**  
**LOUISIANA (Continued)**

**NSG 7542** Louisiana State University - Shreveport 2573  
Paleohydrology of Mars  
*Period* *Obligations*  
04/01/79-10/31/81 FY81 TOTAL \$80,895  
*Pnn Invest NASA Tech Officer CASE Category*  
Nummedal, D Boyce, J M 32-Geological Sci

**NASW 3344** Southern Univ & A&M College 2579  
Return on automatic data processing investment  
*Period* *Obligations*  
03/14/80-09/30/82 FY81 \$86,820 TOTAL \$142,191  
*Pnn Invest NASA Tech Officer CASE Category*  
Roquemore, L HQ-NS/Smith, J A  
22-Computer Science  
HQ-LC/Pohly, J G

**NAG 1-162** Louisiana Tech University 2574  
Study of photocatalytic effects of aqueous suspensions of platinumized semiconductor materials on reaction rates of candidate redox reactions  
*Period* *Obligations*  
06/01/81-05/31/82 FY81 \$54,046 TOTAL \$54,046  
*Pnn Invest NASA Tech Officer CASE Category*  
Miles, A M LARC/Byvik, C E 12-Chemistry  
LARC/Conway, E J

**NAG 2-101** Tulane University 2580  
Localization and histochemical and physiologic characteristics of the central emetic apparatus related to motion sickness  
*Period* *Obligations*  
03/01/81-02/28/82 FY81 \$48,000 TOTAL \$48,000  
*Pnn Invest NASA Tech Officer CASE Category*  
Brizze, K R ARC/Mehler, W R 56-Medical Sciences  
Guth, G

**NSG 7534** Northeast Louisiana University 2575  
Stratigraphy and crater morphology  
*Period* *Obligations*  
02/01/79-05/14/82 FY81 \$19,984 TOTAL \$53,406  
*Pnn Invest NASA Tech Officer CASE Category*  
Dehon, R HQ-SL/Boyce, J M 32-Geological Sci  
HQ-SL/Holt, H E

**NCA 2-800001** Tulane University 2581  
Evolutionary relationships among bacteria Thermophiles and mesophiles  
*Period* *Obligations*  
03/01/80-02/28/82 FY81 \$5,454 TOTAL \$10,908  
*Pnn Invest NASA Tech Officer CASE Category*  
Johnson, E J ARC/MacElroy, R D 51-Biological Sci

**NSG 7628** Northeast Louisiana University 2576  
Detection of buried surfaces on Mars  
*Period* *Obligations*  
08/01/79-01/31/82 FY81 TOTAL \$7,514  
*Pnn Invest NASA Tech Officer CASE Category*  
Dehon, R HQ-SL/Boyce, J M 32-Geological Sci  
HQ-SL/Quaide, W L

**NSG 1648** University of New Orleans 2582  
Study on one and two dimensional filtering and deconvolution algorithms for a streaming array computer  
*Period* *Obligations*  
09/01/79-12/31/81 FY81 TOTAL \$37,453  
*Pnn Invest NASA Tech Officer CASE Category*  
Ioup, G E LARC/Lambiotte, J J, Jr  
21-Mathematics  
LARC/Shoosmith, J N

**NAG 8-4** Southern Univ & A&M College 2577  
Crystal structure and catalytic properties of noble metal-rare Earth alloys  
*Period* *Obligations*  
02/19/80-04/30/82 FY81 \$52,470 TOTAL \$83,670  
*Pnn Invest NASA Tech Officer CASE Category*  
Mohanty, R C MSFC/McClure, J C 13-Physics  
Collins, W E MSFC/Kent, M I

**NAG 1-16** Xavier University - Louisiana 2583  
Mathematical enhancement of data from scientific measuring instruments  
*Period* *Obligations*  
01/01/80-12/31/81 FY81 TOTAL \$54,678  
*Pnn Invest NASA Tech Officer CASE Category*  
Ioup, J W LARC/Wood, G M 21-Mathematics

**NAS 1-15335** Southern Univ & A&M College 2578  
Atomic oxygen stimulated outgassing experiment for the long duration exposure facility  
*Period* *Obligations*  
04/07/78-04/01/82 FY81 TOTAL \$50,426  
*Pnn Invest NASA Tech Officer CASE Category*  
Scott, R L LARC/O'Neal, R L 31-Atmos Sci  
LARC/Carter, D J

**NSG 8050** Xavier University - Louisiana 2584  
Solar radiation measurement project  
*Period* *Obligations*  
06/02/77-12/31/81 FY81 \$29,432 TOTAL \$127,082  
*Pnn Invest NASA Tech Officer CASE Category*  
Ioup, J MSFC/Espy, P N 39-Env Sci, NEC  
MSFC/Kent, M I



# **NASA'S UNIVERSITY PROGRAM MAINE**

## **MAINE**

<b>NAS 5-26574</b>	<b>University of Maine - Orono</b>	<b>2585</b>
Provide computer time		
<i>Period</i>	<i>Obligations</i>	
06/03/81-12/31/81	FY81 \$9,930	TOTAL \$9,930
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Byther, T	GSFC/Imhoff, M	22-Computer Science

## **MARYLAND**

<b>NCA 5-96</b>	<b>Bowie State College</b>	<b>2586</b>
Recruit into engineering high ability minority and female students (REHAMFS)		
<i>Period</i>	<i>Obligations</i>	
03/14/80-08/15/82	FY81 \$48,941	TOTAL \$48,941
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bonds, J W	GSFC/Mundy, J R	45-Elec Engr

<b>NCA 5-97</b>	<b>Bowie State College</b>	<b>2587</b>
Summer Institute in Science and Technology for junior high school girls		
<i>Period</i>	<i>Obligations</i>	
04/30/80-06/30/82	FY81 \$805	TOTAL \$1,599
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Butler, O B	GSFC/Mundy, J	19-Phys Sci, NEC

<b>NGR 21-027-004</b>	<b>Bowie State College</b>	<b>2588</b>
Research in numerical integration		
<i>Period</i>	<i>Obligations</i>	
05/25/71-09/30/82	FY81 \$16,714	TOTAL \$161,872
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Srivastava, S	GSFC/Maury, J L	21-Mathematics

<b>NGR 21-027-010</b>	<b>Bowie State College</b>	<b>2589</b>
Holographic gratings for spectrographic applications study of aberrations		
<i>Period</i>	<i>Obligations</i>	
05/14/73-07/31/82	FY81 \$19,189	TOTAL \$133,326
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bhatia, M S	GSFC/Caruso, A J	13-Physics
	GSFC/Osantowski, J F	

<b>NGT 21-027-012</b>	<b>Bowie State College</b>	<b>2590</b>
Training of undergraduate students in sciences and engineering		
<i>Period</i>	<i>Obligations</i>	
06/01/74-03/31/82	FY81 \$46,805	TOTAL \$274,758
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kirksey, C H	GSFC/Chapman, J W	99-Multi-Discip

<b>NSG 5009</b>	<b>Bowie State College</b>	<b>2591</b>
Characterization of the physico-chemical properties of polymeric materials for aerospace flights		
<i>Period</i>	<i>Obligations</i>	
07/01/74-12/31/81	FY81 \$69,058	TOTAL \$205,343
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rock, M	GSFC/Halpert, G	12-Chemistry
Vasanth, K L		

<b>NSG 5051</b>	<b>Coppin State College</b>	<b>2592</b>
Research on the failure mechanism and other factors leading to reduce cycle life in aerospace nickel-cadmium cells		
<i>Period</i>	<i>Obligations</i>	
05/01/75-12/31/81	FY81	TOTAL \$229,001
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McDermott, P P	GSFC/Gaddy, E M	12-Chemistry

<b>NAG 1-211</b>	<b>Johns Hopkins University</b>	<b>2593</b>
Ultrasonic evaluation of orthopedic implant materials and devices		
<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$20,000	TOTAL \$20,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Green,, R E , Jr	LARC/Heyman, J S	47-Materials Engr
	LARC/Crantrell, J H , Jr	

<b>NAG 5-32</b>	<b>Johns Hopkins University</b>	<b>2594</b>
Interpretation and delineation of the Earth's gravity field		
<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/82	FY81 \$35,000	TOTAL \$75,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Marsh, B D	GSFC/Welker, J	32-Geological Sci

<b>NAG 5-35</b>	<b>Johns Hopkins University</b>	<b>2595</b>
Petrologic and geophysical study of the source of long wavelength crustal magnetic anomalies		
<i>Period</i>	<i>Obligations</i>	
05/01/80-04/30/82	FY81 \$30,000	TOTAL \$49,462
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Marsh, B D	GSFC/Kouns, C W	32-Geological Sci
Schlenger, C		

<b>NAG 5-157</b>	<b>Johns Hopkins University</b>	<b>2596</b>
Energy transfer in the active medium of submillimeter lasers		
<i>Period</i>	<i>Obligations</i>	
04/15/81-04/14/82	FY81 \$12,500	TOTAL \$12,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Robinson, D W	GSFC/Lawandy, N M	13-Physics
	GSFC/Buften, J	

<b>NAG 5-200</b>	<b>Johns Hopkins University</b>	<b>2597</b>
Application of mixed physical statistical models		
<i>Period</i>	<i>Obligations</i>	
08/01/81-07/31/82	FY81 \$48,607	TOTAL \$48,607
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Phillips, O M	GSFC/Susskind, J	31-Atmos Sci
Munteanu, M J		

## NASA'S UNIVERSITY PROGRAM

### MARYLAND (Continued)

<b>NAGW 16</b>	<b>Johns Hopkins University</b>	<b>2598</b>
<b>An ultraviolet imaging detector for shuttle astronomy</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/01/79-08/31/82</b>	<b>FY81 \$70,000</b>	<b>TOTAL \$115,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Moos, H W</b>	<b>HQ-SC/Weiler, E J</b>	<b>13-Physics</b>
	<b>HQ-SC/Boggett, N W</b>	

NAS 5-26085	Johns Hopkins University	2604
Clinical ophthalmic ultrasound improvements		
<i>Period</i>	<i>Obligations</i>	
03/04/80-11/04/80	FY81	TOTAL \$26,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Piro, P A	GSFC/Friedman, D S	
Garrison, J B		56-Medical Sciences

<b>NAGW 154</b>	<b>Johns Hopkins University</b>	<b>2599</b>
Investigation of composition and dynamics of the Jovian magnetosphere		
<i>Period</i>	<i>Obligations</i>	
03/15/81-03/14/82	FY81 \$105,000	TOTAL \$105,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Krimigis, S M	HQ-SC/Mayr, H G	13-Physics
	HQ-SC/Wiskerchen, M J	

<b>NAS 5-27000</b>	<b>Johns Hopkins University</b>	<b>2605</b>
<b>Development phase of the Hopkins ultraviolet telescope (HUT)</b>		
<i>Period</i>	<i>Obligations</i>	
09/21/81-03/31/86	FY81 \$2,760,000 TOTAL \$2,760,000	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Davidson, A F	GSFC/Young, E	11-Astronomy

<b>NAS 5-11415</b> <b>Johns Hopkins University</b> <b>2600</b>	
<b>Atmosphere Explorer photoelectron and energetic particle experiment</b>	
<i>Period</i>	<i>Obligations</i>
<b>08/15/74-09/30/82</b>	<b>FY81 \$258,000 TOTAL \$1,834,377</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>
<b>Doering, J P</b>	<b>GSFC/Bullock, G D</b>
	<i>CASE Category</i>
	<b>31-Atmos Sc</b>

NAS 6-2993		Johns Hopkins University	2606
Study of the ocean fine structure			
<i>Period</i>		<i>Obligations</i>	
05/01/79-04/30/80	FY81	TOTAL	\$52,331
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Phillips, O M	WFC/Huang, N E	33-Oceanography	
	WFC/Long, S R		

<b>NAS 5-23732</b>	<b>Johns Hopkins University</b>	<b>2601</b>
<b>Development of a command system for a fully implantable human tissue stimulator</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/26/76-11/15/81</b>	<b>FY81</b>	<b>TOTAL \$525,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Long, D</b>	<b>GSFC/Friedman, D S</b>	
<b>Fishell, R E</b>	<b>56-Medical Sciences</b>	

NAS 6-3162	Johns Hopkins University	2607
Investigation of surface wave and turbulence phenonema associated with remote sensing		
<i>Period</i>	<i>Obligations</i>	
03/18/81-03/17/82	FY81 \$50,244	TOTAL \$50,244
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Phillips, O M	WFC/Huang, N E	33-Oceanography
Kitaigorodskn, S A	WFC/Long, S R	

NAS 5-25358	Johns Hopkins University	2602
Grating facility use		
<i>Period</i>	<i>Obligations</i>	
10/01/78-12/31/81	FY81	TOTAL \$61,300
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fastie, W G	GSFC/Fowler, W S	13-Physics

<b>NAS 8-32903</b>	<b>Johns Hopkins University</b>	<b>2608</b>
<b>Scientific investigations in support of the space telescope project</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/01/78-01/31/84</b>	<b>FY81</b>	<b>TOTAL \$151,300</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Fastie, W G</b>	<b>MSFC/O'dell, C R</b>	<b>11-Astronomy</b>

NAS 5-26057		Johns Hopkins University	2603
Generate an investigation development plan and establish the preliminary interfaces between the orbiter and instrument for the far ultraviolet telescope/spectrometer			
<i>Period</i>	<i>Obligations</i>		
02/06/80-09/30/81	FY81	\$317,592	TOTAL \$484,292
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Davidson, A F	GSFC/Young, E W	11-Astronomy	

NAS 9-16030		Johns Hopkins University	2609
Effect of weightlessness on diurnal pattern of resin and aldosterone concentration in plasma			
<i>Period</i>		<i>Obligations</i>	
01/17/80-01/31/82	FY81	TOTAL	\$36,178
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Walker, W G	JSC/White, T	59-Life Sci, NEC	

<b>NAS 9-16036</b>	<b>Johns Hopkins University</b>	<b>2610</b>
Life science flight experiment	Factor affecting respiratory tract	
particle deposition and clearance in the space environment		
<i>Period</i>	<i>Obligations</i>	
01/17/80-01/31/82	FY81	TOTAL \$23,237
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Proctor, D F	JSC/French, B	59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

<b>NCC 5-18</b>	<b>Johns Hopkins University</b>	<b>2611</b>	<b>NSG 1442</b>	<b>Johns Hopkins University</b>	<b>2618</b>
Research of thermal regime of the upper mantle	Intermittent/transient faults in computer systems based systems				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
06/14/79-08/30/80	FY81 TOTAL \$10,452		09/15/77-09/30/82	FY81 \$124,118 TOTAL \$282,319	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Marsh, B D	GSFC/Langel, R A	32-Geological Sci	Masson, G M	LARC/Pitts, F L	45-Elec Engr
<b>NCC 5-24</b>	<b>Johns Hopkins University</b>	<b>2612</b>	<b>NSG 2303</b>	<b>Johns Hopkins University</b>	<b>2619</b>
Dye laser traveling wave amplifier research	Experiments on sheared or strained turbulence				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
12/01/80-11/30/81	FY81 \$43,962 TOTAL \$43,962		02/01/78-11/30/81	FY81 \$52,455 TOTAL \$157,498	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Davidson, F	GSFC/Degnan, J J	49-Engr, NEC	Corrsin, S	ARC/Rubesin, M W	41-Aero Engr
				ARC/Marvin, J G	
<b>NGR 21-001-001</b>	<b>Johns Hopkins University</b>	<b>2613</b>	<b>NSG 5255</b>	<b>Johns Hopkins University</b>	<b>2620</b>
Rocket and laboratory experiments and analysis on ultraviolet spectra of upper atmosphere	Ultraviolet studies of the outer planets				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
08/01/61-03/14/82	FY81 \$365,000 TOTAL \$5,696,126		03/15/78-03/14/80	FY81 TOTAL \$12,000	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Feldman, P D	GSFC/Guidotti, J	11-Astronomy	Moos, H W	GSFC/Bogges, A	11-Astronomy
	HQ-SC/Weiler, E J			GSFC/West, D K	
<b>NGR 21-001-111</b>	<b>Johns Hopkins University</b>	<b>2614</b>	<b>NSG 5310</b>	<b>Johns Hopkins University</b>	<b>2621</b>
Small group performance and effects of contingency management in a programmed environment	Study of interstellar matter and chromospheres				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
03/31/72-10/31/81	FY81 \$85,500 TOTAL \$1,036,294		12/15/78-12/14/79	FY81 TOTAL \$12,000	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brady, J V	ARC/Patton, R M	62-Social Aspects	Moos, H W	GSFC/Kupperian, J E	11-Astronomy
Emurian, H H					
<b>NGT 21-001-800</b>	<b>Johns Hopkins University</b>	<b>2615</b>	<b>NSG 5393</b>	<b>Johns Hopkins University</b>	<b>2622</b>
Graduate student researchers program	Studies of the ultraviolet spectra of astronomical sources				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$10,195 TOTAL \$19,390		07/01/79-12/31/81	FY81 \$44,500 TOTAL \$110,900	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Davidson, A F	HQ-LC/Carter, C H	41-Aero Engr	Moss, H W	GSFC/Bogges, A	11-Astronomy
			Lane, A L		
			Feldman, P D		
<b>NGT 21-001-980</b>	<b>Johns Hopkins University</b>	<b>2616</b>	<b>NSG 7055</b>	<b>Johns Hopkins University</b>	<b>2623</b>
Propagation of disturbances on the ocean surface graduate student researchers program	Satellite data analysis				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$13,000 TOTAL \$23,405		01/01/74-12/31/81	FY81 \$90,000 TOTAL \$579,000	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Phillips, O	HQ-LC/Carter, C H	13-Physics	Krimigis, S M	HQ-SC/Mayr, H G	13-Physics
			Potemra, T A	HQ-SC/Schmerling, E R	
<b>NGT 21-001-981</b>	<b>Johns Hopkins University</b>	<b>2617</b>	<b>NSG 7449</b>	<b>Johns Hopkins University</b>	<b>2624</b>
Graduate student researchers program	Analysis of X-ray astronomy data				
<i>Period</i>	<i>Obligations</i>		<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$8,675 TOTAL \$8,675		05/15/78-05/14/81	FY81 TOTAL \$60,420	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Judd, B R	HQ-LC/Carter, C H	13-Physics	Davidson, A F	HQ-SC/Weiler, E J	11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **MARYLAND (Continued)**

**NAG 5-12**                      **Morgan State University**                      **2625**  
 Relating thematic mapper bands to agronomics variables for soybeans and corn

<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/82	FY81 \$30,544	TOTAL \$62,962
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fan, C J	GSFC/Tucker, C J	39-Env Sci, NEC

**NAG 5-14**                      **Morgan State University**                      **2626**  
 Evaluation of the quality of rainfall intensity estimates

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81 \$21,807	TOTAL \$42,851
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Knox, N	GSFC/Laughlin, C R	31-Atmos Sci
	GSFC/Neil, E A	

**NAS 5-23558**                      **Morgan State University**                      **2627**  
 The investigation, identification, analysis and interpretation of new possibilities in transfer technology

<i>Period</i>	<i>Obligations</i>	
06/01/76-03/31/82	FY81	TOTAL \$103,340
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Taylor, J H	GSFC/Friedman, D S	49-Engr, NEC

**NGT 21-025-080**                      **Morgan State University**                      **2628**  
 The 10th summer research participation program

<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/82	FY81 \$84,350	TOTAL \$159,350
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Proctor, N K	HQ-LC/Pohly, J G	99-Multi-Discip
	GSFC/Mundy, J R	

**NSG 5074**                      **Morgan State University**                      **2629**  
 Research calibration of photographic and spectrographic films

<i>Period</i>	<i>Obligations</i>	
10/01/75-03/31/82	FY81 \$24,830	TOTAL \$119,876
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hammond, E C, Jr	GSFC/Baker, G R	11-Astronomy
	GSFC/Stober, A K	

**NSG 5401**                      **Morgan State University**                      **2630**  
 Research of high temperature solar converter

<i>Period</i>	<i>Obligations</i>	
08/01/79-06/30/82	FY81	TOTAL \$90,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Oliver, F W	GSFC/Duncan, C H	31-Atmos Sci
Ascher, G		

**NGR 21-002-010**                      **University of Maryland - Baltimore**                      **2631**  
 Theoretical and experimental research on gravitational radiation

<i>Period</i>	<i>Obligations</i>	
06/12/63-09/30/79	FY81	TOTAL \$1,005,625
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Misner, C W	HQ-SC/Roman, N G	11-Astronomy
	HQ-SC/Rosendhal, J D	

**NAG 2-100**                      **Univ of Maryland Baltimore Profsnl School**                      **2632**  
 Gonadal steroids and muscle atrophy

<i>Period</i>	<i>Obligations</i>	
01/15/81-03/31/82	FY81 \$48,530	TOTAL \$48,530
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Max, S R	ARC/Ellis, S	51-Biological Sci

**NAG 1-24**                      **University of Maryland - College Park**                      **2633**  
 An experimental investigation of the effects on the near wall turbulent boundary layer structure by drag reducing flat plate surface geometry changes

<i>Period</i>	<i>Obligations</i>	
01/15/80-01/14/82	FY81 \$40,000	TOTAL \$65,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wallace, J M	LARC/Walsh, M J	41-Aero Engr
	LARC/Hefner, J N	

**NAG 1-51**                      **University of Maryland - College Park**                      **2634**  
 Research in problem solving systems

<i>Period</i>	<i>Obligations</i>	
06/01/80-08/31/82	FY81	TOTAL \$45,839
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Minker, J	LARC/Barker, L K	22-Computer Science
	LARC/Hankins, W W	

**NAG 1-151**                      **University of Maryland - College Park**                      **2635**  
 Properties of large nearly perfect crystals at very low temperatures

<i>Period</i>	<i>Obligations</i>	
02/15/81-02/14/82	FY81 \$55,000	TOTAL \$55,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Weber, J	LARC/Singh, J J	13-Physics
Richard, J P		

**NAG 2-28**                      **University of Maryland - College Park**                      **2636**  
 Volcanic impact on stratospheric aerosol chemistry

<i>Period</i>	<i>Obligations</i>	
03/01/80-11/30/81	FY81 \$36,000	TOTAL \$61,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zoller, W H	ARC/Page, W A	31-Atmos Sci

**NAG 3-192**                      **University of Maryland - College Park**                      **2637**  
 Characterization studies of deposits formed from thermally stressed jet fuels

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$75,611	TOTAL \$75,611
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Adler, I	LERC/Seng, G T	12-Chemistry

**NAG 5-9**                      **University of Maryland - College Park**                      **2638**  
 Research relative to the development of hydrologic models for remote sensing technology

<i>Period</i>	<i>Obligations</i>	
02/01/80-02/28/82	FY81 \$89,831	TOTAL \$179,791
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ragan, R M	GSFC/Rango, A	39-Env Sci, NEC
	GSFC/Salomonson, V V	

## NASA'S UNIVERSITY PROGRAM

### MARYLAND (Continued)

NAG 5-26		University of Maryland - College Park	2639
Research of sea-air-land interaction in climate modeling			
<i>Period</i>		<i>Obligations</i>	
03/01/80-02/28/82	FY81	\$156,580	TOTAL \$235,683
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Baer, F	GSFC/Halem, M		31-Atmos Sc

NAG 5-29		University of Maryland - College Park	2640
Research of penumbral surges and their physical relationships to solar flares			
Period		Obligations	
04/01/80-09/30/81	FY81	TOTAL	\$7,000
Prin Invest	NASA Tech Officer	CASE Category	
Schmadl, E J	GSFC/Wende, C	31-Atmos Sci	
McKenna-lawlor, S			

NAG 5-54		University of Maryland - College Park		2641
Studies of Seyfert and X-ray galaxies				
<i>Period</i>		<i>Obligations</i>		
05/01/80-04/30/82	FY81	\$11,100	TOTAL	\$21,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Wilson, A S	GSFC/Bogges, A		11-Astronomy	

NAG 5-74		University of Maryland - College Park	2642
Ultraviolet cometary spectrophotometry			
<i>Period</i>		<i>Obligations</i>	
07/01/80-06/30/81	FY81	TOTAL	\$5,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Ahearn, M F	GSFC/Boggess, A	11-Astronomy	

<b>NAG 5-90</b>		<b>University of Maryland - College Park</b>	<b>2643</b>
<b>Research relative to laser and star tracking on GSFC telescopes</b>			
<i>Period</i>		<i>Obligations</i>	
07/15/80-06/30/82	<b>FY81</b>	<b>TOTAL</b>	<b>\$22,930</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Currie, D G	GSFC/Friskey, J L		31-Atmos Sci

<b>NAG 5-99</b>		<b>University of Maryland - College Park</b>	<b>2644</b>
Improving communications between humans and computer-directed automatic systems			
<i>Period</i>		<i>Obligations</i>	
09/01/80-11/30/81	FY81	TOTAL	\$54,227
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Rieger, C J	GSFC/Maury, J	22-Computer Science	

NAG 5-133		University of Maryland - College Park		2645
Research relative to severe convective storm diagnostics				
Period		Obligations		
01/01/81-12/31/81		FY81 \$29,877	TOTAL	\$29,877
Pnn Invest	NASA Tech Officer		CASE Category	
Pitter, R. L	GSFC/Uccellini, L W		39-Env Sci, NEC	

NAG 5-135		University of Maryland - College Park	2646
Energetic particle acceleration in solar flares			
Period	Obligations		
01/01/81-12/31/82	FY81	\$100,000	TOTAL \$100,000
Prin Invest	NASA Tech Officer		CASE Category
Chang, C C	GSFC/Ramaty, R		13-Physics
Holmgren, H D			

NAG 5-154		University of Maryland - College Park		2647
Research relative to automated multisensor image registration				
Period		Obligations		
04/01/81-03/31/82	FY81	\$20,750	TOTAL	\$20,750
Prin Invest	NASA Tech Officer	CASE Category		
Kanal, L N	GSFC/Ramapriyan, H K	31-Atmos Sci		

NAG 5-169		University of Maryland - College Park		2648
Measurement of interstellar helium impinging on the Earth				
<i>Period</i>		<i>Obligations</i>		
04/15/81-04/14/82		FY81	\$18,873	TOTAL \$18,873
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Mazzocchi, P H		GSFC/Guidotti, J G		13-Physics
Opal, C B		HQ-SC/Weiler, E J		
Meir. R R				

NAG 5-203		University of Maryland - College Park	2649
Satellite sensing of air pollution and ground signatures			
Period	Obligations		
09/01/81-08/31/82	FY81	\$51,592	TOTAL \$51,592
Prin Invest	NASA Tech Officer	CASE Category	
Baer, F	GSFC/Fraser, R S	31-Atmos Sci	
Kaufman, Y J	GSFC/Cressy, P J		

<b>NAG 8-307</b>	<b>University of Maryland - College Park</b>	<b>2650</b>
<b>Optical spectroscope studies of identification of high galactic latitude High Energy Astronomical Observatory-B X-ray sources</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/18/80-02/17/82</b>	<b>FY81</b>	<b>TOTAL \$9,500</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Wilson, A S</b>	<b>MSFC/Jones, J B</b>	<b>11-Astronomy</b>

NAG 8-329		University of Maryland - College Park	2651
X-ray study of elliptical and SO galaxies with with compact nuclear radio			
<i>Period</i>		<i>Obligations</i>	
03/01/80-02/28/82	FY81	TOTAL	\$11,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Wilson, A S	MSFC/Jones, J B	11-Astronomy	

<b>NAG 8-349</b>	<b>University of Maryland - College Park</b>	<b>2652</b>
<b>Studies of Crab nebula-like supernova remnants</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/20/80-06/30/82</b>	<b>FY81</b>	<b>TOTAL \$8,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Wilson, A S</b>	<b>MSFC/Swearingen, J C</b>	<b>11-Astronomy</b>
<b>Kundu, M R</b>		

**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

**NAG 8-369**      **University of Maryland - College Park**      **2653**  
X-ray investigations of selected field in the old galactic supernova remnant S147  
*Period*      *Obligations*  
08/15/80-08/14/81      **FY81**      **TOTAL \$7,500**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Erickson, W C      MSFC/Stone, J F      11-Astronomy  
Angerhofer, P E

**NAG 8-379**      **University of Maryland - College Park**      **2654**  
Ionospheric density measurement by X-ray source occultation  
*Period*      *Obligations*  
09/15/80-08/31/81      **FY81**      **TOTAL \$2,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Matthews, D L      MSFC/Stone, J F      11-Astronomy

**NAGW 33**      **University of Maryland - College Park**      **2655**  
A program to develop remote sensing excellence  
*Period*      *Obligations*  
03/01/80-04/31/84      **FY81 \$100,000**      **TOTAL \$300,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ragan, R M      HQ-ET/Vitale, J A      39-Env Sci, NEC

**NAGW 81**      **University of Maryland - College Park**      **2656**  
A study of discontinuities and radiation processes in solar terrestrial plasmas  
*Period*      *Obligations*  
06/01/80-05/31/82      **FY81 \$275,000**      **TOTAL \$560,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Papadopoulos, K      HQ-SC/Birmingham, T J      13-Physics  
Wu, C S      HQ-SC/Newton, G P

**NAGW 101**      **University of Maryland - College Park**      **2657**  
Thermal and suprathemal ion composition studies close to the Sun  
*Period*      *Obligations*  
10/01/80-09/30/81      **FY81 \$188,170**      **TOTAL \$188,170**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gloeckler, G      HQ-SC/Chipman, E C      13-Physics

**NAGW 219**      **University of Maryland - College Park**      **2658**  
Workshop on carbohydrate synthesis  
*Period*      *Obligations*  
06/15/81-06/14/82      **FY81 \$25,000**      **TOTAL \$25,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ponnamparuma, C      HQ-SB/Bredt, J H      12-Chemistry  
HQ-SB/Devincenzi, D L

**NAGW 226**      **University of Maryland - College Park**      **2659**  
The Voyager mission Implications for planetary biology  
*Period*      *Obligations*  
06/26/81-06/25/82      **FY81 \$25,000**      **TOTAL \$25,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ponnaperuma, C      HQ-SB/Devincenzi, D L      12-Chemistry

**NAS 5-11063**      **University of Maryland - College Park**      **2660**  
Experiment to analyze ions and electrons for IMP-H and J  
*Period*      *Obligations*  
06/11/68-10/31/80      **FY81**      **TOTAL \$2,162,997**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gloecker, H G      GSFC/Corrigan, J P      13-Physics

**NAS 5-20062**      **University of Maryland - College Park**      **2661**  
Low energy charged particles experiment for international Sun-Earth Explorer mother and heliocentric spacecraft  
*Period*      *Obligations*  
05/02/74-11/30/81      **FY81 \$125,000**      **TOTAL \$1,221,861**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gloeckler, G      GSFC/Corrigan, J P      13-Physics

**NAS 5-23237**      **University of Maryland - College Park**      **2662**  
Feasibility study for infrared interferometer, spectrometer, and radiometer for Mariner/Jupiter 1977 launch  
*Period*      *Obligations*  
05/09/73-10/31/81      **FY81 \$34,000**      **TOTAL \$124,900**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Ponnamparuma, C A      GSFC/Conrath, B J      13-Physics

**NAS 5-23457**      **University of Maryland - College Park**      **2663**  
Study of application of a field neutron generator  
*Period*      *Obligations*  
04/06/76-09/30/81      **FY81 \$19,100**      **TOTAL \$69,220**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Sommer, S E      GSFC/Trombka, J I      39-Env Sci, NEC

**NAS 5-25437**      **University of Maryland - College Park**      **2664**  
Feasibility study for fine structure solar energy converter  
*Period*      *Obligations*  
02/14/79-10/14/80      **FY81**      **TOTAL \$12,441**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Taylor, L S      GSFC/Peake, H J      45-Elec Engr

**NAS 5-25472**      **University of Maryland - College Park**      **2665**  
International Sun-Earth Explorer 3 data interpretation services  
*Period*      *Obligations*  
01/29/79-03/28/82      **FY81 \$46,117**      **TOTAL \$104,617**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Coplan, M A      GSFC/Ogilvie, K W      11-Astronomy

**NAS 5-25486**      **University of Maryland - College Park**      **2666**  
Support to the space telescope wide field planetary camera development team  
*Period*      *Obligations*  
02/01/79-10/31/82      **FY81 \$30,000**      **TOTAL \$104,047**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Currie, D G      GSFC/Sours, W T      31-Atmos Sci

# **NASA'S UNIVERSITY PROGRAM** **MARYLAND (Continued)**

**NAS 5-25735**      **University of Maryland - College Park**      **2667**  
 Interplanetary monitoring of platform-H and J spacecraft ion and electron experiment

Period	Obligations
11/01/79-10/31/82	FY81 \$102,464      TOTAL \$187,464
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Glorckler, G	GSFC/Corrigan, J P      11-Astronomy

**NAS 5-25764**      **University of Maryland - College Park**      **2668**  
 Perform research in natural human to machine interfaces for NASA mission operations data systems

Period	Obligations
06/29/79-11/30/81	FY81      TOTAL \$104,502
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Rieger, C S	GSFC/Truszkowski, W      99-Multi-Discip
Somet, H	

**NAS 5-26098**      **University of Maryland - College Park**      **2669**  
 Definition phase for transition radiation and ionization calorimeter (TRIC) telescope

Period	Obligations
03/04/80-09/30/82	FY81      TOTAL \$55,170
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Yodh, G B	GSFC/Ormes, J F      11-Astronomy

**NAS 5-26294**      **University of Maryland - College Park**      **2670**  
 Funds to support colloquium on chemical evolution of comets and the origin of life on October 29-31, 1980 in College Park, Maryland

Period	Obligations
07/01/80-05/31/81	FY81      TOTAL \$18,940
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ponnamperuma, C	GSFC/Baurer, S      11-Astronomy

**NAS 5-26448**      **University of Maryland - College Park**      **2671**  
 Provide services to the GSFC career development center

Period	Obligations
01/01/81-11/30/81	FY81 \$29,153      TOTAL \$29,153
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Leibowitz, Z B	GSFC/Menchen, D      69-Psych, NEC

**NAS 5-26463**      **University of Maryland - College Park**      **2672**  
 Provide scientific personnel for participation in the cooperative visitor program

Period	Obligations
02/01/81-01/31/82	FY81 \$229,549      TOTAL \$229,549
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Gal-chen, T	GSFC/Neil, E A      31-Atmos Sci
	GSFC/Kreins, E R

**NAS 5-26582**      **University of Maryland - College Park**      **2673**  
 Study of energetic particle acceleration

Period	Obligations
05/08/81-06/07/82	FY81 \$10,000      TOTAL \$10,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Eichler, D	GSFC/Ramaty, R      13-Physics

**NAS 5-26618**      **University of Maryland - College Park**      **2674**  
 Provide workshop and report on status and future directions of computer science

Period	Obligations
06/29/81-09/15/81	FY81 \$15,548      TOTAL \$15,548
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Yeh, R T	GSFC/Schneoh, P B      45-Elec Engr
Glignon, V D	

**NAS 5-26649**      **University of Maryland - College Park**      **2675**  
 Study of interconnectivity of computers

Period	Obligations
07/22/81-07/22/82	FY81 \$29,231      TOTAL \$29,231
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Agawala, A K	GSFC/Dalton, J T      22-Computer Science
	GSFC/Howell, D R

**NAS 5-26650**      **University of Maryland - College Park**      **2676**  
 Development of university training modules and demonstration projects for joint NASA/Corps of Engineers remote sensing projects

Period	Obligations
07/17/81-07/16/82	FY81 \$20,000      TOTAL \$20,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ragan, R M	GSFC/Gervin, J C      39-Env Sci, NEC

**NAS 5-26654**      **University of Maryland - College Park**      **2677**  
 Laser spectrometer

Period	Obligations
07/15/81-01/14/82	FY81 \$39,176      TOTAL \$39,176
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Wilkerson, T D	GSFC/Dombrowski, M      13-Physics
	GSFC/Schwemmer, G K

**NAS 8-33105**      **University of Maryland - College Park**      **2678**  
 A comparative study of meter-decameter bursts with X-ray loops and flaming bright points as observed by the Skylab S-054 experiment

Period	Obligations
10/12/78-10/11/79	FY81      TOTAL \$32,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Rundu, M R	MSFC/Deloach, A C      13-Physics
	MSFC/Snoddy, W C

**NAS 8-33329**      **University of Maryland - College Park**      **2679**  
 HEAO-B observations of distant QSO associated clusters of galaxies

Period	Obligations
02/14/79-02/13/80	FY81      TOTAL \$8,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Scott, J S	MSFC/Jones, J B, Jr      11-Astronomy
Becker, R H	

# NASA'S UNIVERSITY PROGRAM

## MARYLAND (Continued)

**NAS 8-33346**      **University of Maryland - College Park**      **2680**  
 Radio and optical studies of X-ray clusters of galaxies

<i>Period</i>	<i>Obligations</i>	
02/14/79-02/13/80	FY81	TOTAL \$24,356
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Erickson, W C	MSFC/Jones, J B , Jr	11-Astronomy
Holman, G D		
Matthews, T A		

**NAS 8-33358**      **University of Maryland - College Park**      **2681**  
 An investigation of the relation between Seyfert and other active nuclei galaxies

<i>Period</i>	<i>Obligations</i>	
05/22/79-05/21/80	FY81	TOTAL \$15,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilson, A S	MSFC/Jones, J B , Jr	11-Astronomy

**NAS 8-33557**      **University of Maryland - College Park**      **2682**  
 Construction of a prototype superconducting gravity gradiometer

<i>Period</i>	<i>Obligations</i>	
08/03/79-07/30/80	FY81	TOTAL \$53,510
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Geisler, J E	MSFC/Urban, E W	13-Physics
Richard, J P	MSFC/Shriver, E L	

**NAS 8-33798**      **University of Maryland - College Park**      **2683**  
 Design studies for the shuttle time and frequency transfer experiment

<i>Period</i>	<i>Obligations</i>	
09/12/80-08/31/82	FY81 \$10,000	TOTAL \$20,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Alley, C O	MSFC/Decher, R	31-Atmos Sci
	MSFC/Duncan, B J	

**NAS 8-33822**      **University of Maryland - College Park**      **2684**  
 Development of a superconducting gravity gradiometer

<i>Period</i>	<i>Obligations</i>	
07/23/80-01/22/84	FY81 \$169,000	TOTAL \$257,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Park, H J	MSFC/Urban, E W	31-Atmos Sci
Richard, J P	MSFC/Shriver, E L	

**NAS 8-34429**      **University of Maryland - College Park**      **2685**  
 Biodegradation of materials and services for solid rocket booster

<i>Period</i>	<i>Obligations</i>	
08/04/81-08/03/82	FY81 \$1,000	TOTAL \$1,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Colwell, R	MSFC/Scott, F E	51-Biological Sci
	MSFC/Jackson, C H	

**NCA 2-420001**      **University of Maryland - College Park**      **2686**  
 The study of ATA Pases in extreme halophiles as possible evolutionary markers

<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/81	FY81 \$11,328	TOTAL \$22,656
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ponnamperuma, C	ARC/Hochstein, L I	12-Chemistry

**NCA 5-28**      **University of Maryland - College Park**      **2687**  
 Goddard introduction to engineering careers

<i>Period</i>	<i>Obligations</i>	
06/01/78-06/30/82	FY81	TOTAL \$37,065
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wockenfuss, W A	GSFC/Mundy, J R	49-Engr, NEC
	GSFC/Chapman, J W	

**NCC 1-25**      **University of Maryland - College Park**      **2688**  
 Airborne water vapor lidar experiment

<i>Period</i>	<i>Obligations</i>	
08/01/79-10/31/81	FY81 \$20,000	TOTAL \$108,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilkerson, T D	LARC/Browell, E V	31-Atmos Sci
	LARC/Carter, A F	

**NCC 1-41**      **University of Maryland - College Park**      **2689**  
 Selected applications of computational aerodynamics

<i>Period</i>	<i>Obligations</i>	
05/01/80-09/30/82	FY81 \$102,488	TOTAL \$259,113
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, J D	LARC/Drummond, J P	41-Aero Engr
	LARC/Beach, H L	

**NCC 5-9**      **University of Maryland - College Park**      **2690**  
 Cooperative research in solar and stellar astronomy

<i>Period</i>	<i>Obligations</i>	
04/01/79-09/30/81	FY81 \$1,700	TOTAL \$143,394
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Trasco, J D	GSFC/Hobbs, R W	11-Astronomy
Kundu, M R		

**NGL 21-002-005**      **University of Maryland - College Park**      **2691**  
 Theoretical research on dynamics of astrophysical plasmas including studies of structure of plasma shock waves in solar corona and their possible radio emission

<i>Period</i>	<i>Obligations</i>	
02/01/62-11/30/81	FY81 \$85,000	TOTAL \$1,192,493
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wu, C S	HQ-SC/Schmerling, E R	19-Phys Sci, NEC

**NGL 21-002-033**      **University of Maryland - College Park**      **2692**  
 Theoretical and expermental studies in space sciences, including consideration of rocket probe and satellites techniques

<i>Period</i>	<i>Obligations</i>	
06/02/64-10/31/82	FY81 \$102,278	TOTAL \$3,424,576
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Trasco, J D	GSFC/Langel, R A	31-Atmos Sci
	GSFC/Frey, H	



**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

**NGR 21-002-066 University of Maryland - College Park 2693**  
 A study of primary cosmic ray electrons, utilizing balloon-borne experiments

Period	Obligations
11/19/65-07/31/82	FY81 \$30,000 TOTAL \$885,000
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Earl, J A	HQ-SC/Gilman, D A 11-Astronomy
	HQ-SC/Kaluzienski, L J

**NGR 21-002-073 University of Maryland - College Park 2694**  
 Experimental and theoretical investigation of plasma radiation

Period	Obligations
04/26/66-02/28/82	FY81 \$70,000 TOTAL \$1,020,173
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Griem, H R	HQ-SC/Bogges, N W 11-Astronomy
	HQ-SC/Weiler, E J

**NGR 21-002-096 University of Maryland - College Park 2695**  
 Research in atmospheric physics

Period	Obligations
06/21/66-09/30/82	FY81 \$38,000 TOTAL \$1,011,186
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Matthews, D L	GSFC/Hartle, R E 31-Atmos Sci
	GSFC/Hoegy, W R

**NGR 21-002-199 University of Maryland - College Park 2696**  
 Research in solar radio astronomy at short wavelengths

Period	Obligations
04/11/69-10/31/81	FY81 \$74,000 TOTAL \$556,656
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Kundu, M R	HQ-SC/Chipman, E 13-Physics

**NGR 21-002-224 University of Maryland - College Park 2697**  
 Research on the measurement of the charge and isotopic composition on the primary cosmic rays

Period	Obligations
07/31/69-10/31/81	FY81 TOTAL \$418,000
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Gloeckler, G	HQ-SC/Kaluzienski, L J 11-Astronomy

**NGR 21-002-270 University of Maryland - College Park 2698**  
 Research in mechanical theorem proving

Period	Obligations
05/18/70-06/30/80	FY81 TOTAL \$176,661
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Minker, J	HQ-RE/Gevarter, W B 21-Mathematics
	JPL/Friedman, L

**NGR 21-002-291 University of Maryland - College Park 2699**  
 Studies of charged particles in natural and laboratory environments

Period	Obligations
01/28/71-04/15/82	FY81 \$35,508 TOTAL \$424,580
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Coplan, M A	GSFC/Hoffman, R A 13-Physics

**NGR 21-002-316 University of Maryland - College Park 2700**  
 Research program in charged particle detector technology

Period	Obligations
07/01/71-01/14/82	FY81 \$637,681 TOTAL \$3,848,398
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Gloeckler, G	GSFC/Teegarden, B J 13-Physics

**NGR 21-002-317 University of Maryland - College Park 2701**  
 Chemical studies of the origin of life

Period	Obligations
08/18/71-06/30/82	FY81 \$116,669 TOTAL \$1,085,850
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Ponnamperuma, C A	HQ-SB/Devincenzi, D L 12-Chemistry

**NGT 21-002-254 University of Maryland - College Park 2702**  
 Summer faculty fellowship program in research for 24 faculty members

Period	Obligations
12/23/69-03/31/82	FY81 \$178,803 TOTAL \$991,038
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Emad, F P	HQ-LC/Carter, C H 49-Engr, NEC

**NGT 21-002-800 University of Maryland - College Park 2703**  
 Estimation of watershed hydraulic length using remote sensing

Period	Obligations
09/01/80-08/31/82	FY81 \$9,100 TOTAL \$16,100
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
McCuen, R H	HQ-LC/Carter, C H 44-Civil Engr

**NGT 21-002-801 University of Maryland - College Park 2704**  
 Graduate student researchers program

Period	Obligations
09/01/80-08/31/82	FY81 \$9,250 TOTAL \$14,250
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Rose, W	HQ-LC/Carter, C H 11-Astronomy

**NGT 21-002-802 University of Maryland - College Park 2705**  
 Graduate student researchers program

Period	Obligations
09/01/80-08/31/82	FY81 \$8,600 TOTAL \$16,225
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Wentzel, D G	HQ-LC/Carter, C H 11-Astronomy

**NGT 21-002-803 University of Maryland - College Park 2706**  
 Graduate student researchers program

Period	Obligations
09/01/80-08/31/82	FY81 \$9,200 TOTAL \$16,825
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
McDonald, F B	HQ-LC/Carter, C H 13-Physics

**NGT 21-002-804 University of Maryland - College Park 2707**  
 Graduate student researchers program

Period	Obligations
09/01/80-08/31/82	FY81 \$9,200 TOTAL \$16,825
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Gloeckler, G	HQ-LC/Carter, C H 11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

**NGT 21-002-805** University of Maryland - College Park 2708  
 Summer faculty fellowship program

<i>Period</i>	<i>Obligations</i>	
01/01/81-03/31/82	FY81 \$268,414	TOTAL \$268,414
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Yeh, R T	HQ-LC/Carter, C H	19-Phys Sci, NEC

**NGT 21-002-806** University of Maryland - College Park 2709  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$10,176	TOTAL \$10,176
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sucher, J	HQ-LC/Carter, C H	11-Astronomy

**NGT 21-002-807** University of Maryland - College Park 2710  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$10,000	TOTAL \$10,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Adler, I	HQ-LC/Carter, C H	12-Chemistry

**NGT 21-002-808** University of Maryland - College Park 2711  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$9,610	TOTAL \$9,610
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kerr, F J	HQ-LC/Carter, C H	11-Astronomy

**NGT 21-002-809** University of Maryland - College Park 2712  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$10,500	TOTAL \$10,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rodenhuis, D R	HQ-LC/Carter, C H	39-Env Sci, NEC

**NGT 21-002-810** University of Maryland - College Park 2713  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$9,900	TOTAL \$9,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Coplan, M A	HQ-LC/Carter, C H	19-Phys Sci, NEC

**NSG 1468** University of Maryland - College Park 2714  
 Study of surface acoustic wave charge transfer device

<i>Period</i>	<i>Obligations</i>	
11/15/77-12/31/81	FY81	TOTAL \$102,669
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lin, H C	LARC/Benz, H F	45-Elec Engr
	LARC/Husson, C	

**NSG 1570** University of Maryland - College Park 2715  
 General aviation aerodynamics and dynamics

<i>Period</i>	<i>Obligations</i>	
11/01/78-10/31/81	FY81 \$92,786	TOTAL \$209,583
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Winkleman, A E	LARC/Dicarlo, D J	41-Aero Engr
Barlow, J B	LARC/Chambers, J R	
Anderson, J D		

**NSG 2378** University of Maryland - College Park 2716  
 Production of monoclonal antibodies to human T-cells

<i>Period</i>	<i>Obligations</i>	
04/01/79-03/31/82	FY81 \$42,000	TOTAL \$126,554
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Goldsby, R A	ARC/Mandel, A D	56-Medical Sciences

**NSG 5042** University of Maryland - College Park 2717  
 Study of CO2 waveguide laser life problem

<i>Period</i>	<i>Obligations</i>	
01/12/75-12/31/80	FY81	TOTAL \$120,685
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hochuli, U E	GSFC/Degnan, J J	49-Engr, NEC
Davis, C		

**NSG 5123** University of Maryland - College Park 2718  
 Evaluation of software engineering disciplines

<i>Period</i>	<i>Obligations</i>	
08/01/76-12/31/81	FY81 \$96,800	TOTAL \$329,014
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Basili, V R	GSFC/McGarry, F E	49-Engr, NEC
Zelkowitz, M V		

**NSG 5172** University of Maryland - College Park 2719  
 Raman spectroscopy of cosmic ices and planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
04/01/77-02/28/82	FY81 \$22,663	TOTAL \$82,615
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Khanna, R K	GSFC/Donn, B D	12-Chemistry

**NSG 5209** University of Maryland - College Park 2720  
 Multidisciplinary research program in atmospheric science

<i>Period</i>	<i>Obligations</i>	
09/12/77-12/31/81	FY81 \$37,950	TOTAL \$1,050,197
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Thompson, O E	GSFC/Neil, E A	31-Atmos Sci

**NSG 5298** University of Maryland - College Park 2721  
 Solar gamma-ray astronomy research

<i>Period</i>	<i>Obligations</i>	
08/15/78-09/30/81	FY81	TOTAL \$52,800
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Holmgren, H D	GSFC/Ramaty, R	11-Astronomy

## NASA'S UNIVERSITY PROGRAM MARYLAND (Continued)

NSG 5313	University of Maryland - College Park		2722
Resonance fluorescence in atmospheric gases research			
<i>Period</i>		<i>Obligations</i>	
12/01/78-03/15/82	FY81	\$95,000	TOTAL \$360,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
McIlrath, T J	GSFC/Heaps, W S		13-Physics
	GSFC/Hudson, R D		

NSG 5423	University of Maryland - College Park		2729
Geologic modeling of the Patapsco watershed Maryland			
<i>Period</i>	<i>Obligations</i>		
10/15/79-02/28/82	FY81 \$38,378	TOTAL	\$96,284
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Siegrist, H G	GSFC/Masuoka, E J	32-Geological Sci	
	GSFC/Labovitz, M L		

NSG 5320	University of Maryland - College Park	2723
Ground based solar radio observations		Solar Maximum Mission
<i>Period</i>	<i>Obligations</i>	
01/15/79-02/14/82	FY81 \$90,000	TOTAL \$196,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kundu, M R	GSFC/Wende, C	31-Atmos Sci

NSG 5424		University of Maryland - College Park	2730
Infrared studies relevant to a satellite of planet Jupiter			
Period		Obligations	
10/15/79-12/31/80	FY81		TOTAL \$4,395
Pnn Invest	NASA Tech Officer		CASE Category
Khanna, R K	GSFC/Pearl, J C		11-Astronomy

<b>NSG 5323</b>	<b>University of Maryland - College Park</b>	<b>2724</b>
<b>Research of impulse electromagnetic bursts</b>	<b>Solar Maximum</b>	
<b>Mission</b>		
<i>Period</i>	<i>Obligations</i>	
07/01/79-04/30/81	FY81	TOTAL \$24,932
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tidman, D A	GSFC/Donley, J L	31-Atmos Sci

<b>NSG 7046</b>	<b>University of Maryland - College Park</b>	<b>2731</b>
<b>Studies of the Apollo 15 and 16 orbital X-ray data</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/74-03/31/82</b>	<b>FY81</b>	<b>TOTAL \$178,197</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Roosen, J G</b>	<b>HQ-SL/Quande, W L</b>	<b>32-Geological Sci</b>
	<b>HQ-SL/French, B E</b>	

NSG 5390	University of Maryland - College Park	2725
Studies of suspected high carbon abundance planetary nebulae		
<i>Period</i>	<i>Obligations</i>	
07/01/79-06/30/80	FY81	TOTAL \$6,815
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Harrington, J P	GSFC/Bogges, A	11-Astronomy
Marionni, P A		

<b>NSG 7196</b>	<b>University of Maryland - College Park</b>	<b>2732</b>
<b>Research and development of gravitational experiments for space craft</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/76-06/30/80</b>	<b>FY81</b>	<b>TOTAL \$248,513</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Weber, J</b>	<b>HQ-RT/Whiting, E E</b>	<b>13-Physics</b>
<b>Davis, W</b>	<b>JPL/Tward, M</b>	
<b>Paik, H J</b>		

NSG 5399		University of Maryland - College Park	2726
Observations of ultraviolet line spectra stars			
<i>Period</i>		<i>Obligations</i>	
07/01/79-09/30/80	FY81	TOTAL	\$12,300
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bell, R A	GSFC/Boggess, A	11-Astronomy	

<b>NSG 7253</b>	<b>University of Maryland - College Park</b>	<b>2733</b>
Improving communications between humans and computer-directed automatic systems		
<i>Period</i>	<i>Obligations</i>	
07/01/76-08/31/80	FY81	TOTAL \$170,925
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reiger, C J	HQ-RT/Gevarter, W B	22-Computer Science
	LARC/Woolley, C R	

NSG 5404		University of Maryland - College Park		2727
Field aligned particle fluxes and parallel electric potential				
<i>Period</i>		<i>Obligations</i>		
10/01/79-12/31/81		FY81	\$25,000	TOTAL \$49,000
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Lin, C S		GSFC/Spencer, N W		31-Atmos Sci
Wu, C S				

<b>NSG 5408</b>	<b>University of Maryland - College Park</b>	<b>2728</b>
Study of bow shock ions, particle accelerations and plasma instabilities		
<i>Period</i>		<i>Obligations</i>
10/01/79-09/30/82	FY81	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wu, C S	GSFC/Corrigan, J P	11-Astronomy

NSG 7322		University of Maryland - College Park		2734
Research on comets				
<i>Period</i>		<i>Obligations</i>		
03/01/77-08/30/82		FY81	\$62,000	TOTAL \$224,000
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
A'hearn, M F		HQ-SL/Brunk, W E		11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**MARYLAND (Continued)**

**NSG 7340**      **University of Maryland - College Park**      **2735**  
Spectral studies related to dissociation of hydrogen-bromine,  
hydrogen-chloride and bromine-oxide

<i>Period</i>	<i>Obligations</i>	
06/16/77-08/14/82	FY81 \$41,800	TOTAL \$183,583
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ginter, M L	HQ-EB/Watson, R T	13-Physics
	HQ-EB/Tilford, S G	

**NSG 7365**      **University of Maryland - College Park**      **2736**  
Theoretical calculations of non-ballistic fluid dynamic flow for  
ejecta transport in models of multiring basins of impact origin

<i>Period</i>	<i>Obligations</i>	
07/01/77-06/30/80	FY81	TOTAL \$65,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pai, S I	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NSG 7427**      **University of Maryland - College Park**      **2737**  
Numerical simulation experiments in support of NASA solar  
physics missions Solar loop and flare studies

<i>Period</i>	<i>Obligations</i>	
12/01/77-11/30/79	FY81	TOTAL \$124,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Spicer, D S	HQ-SC/Bohlin, J D	13-Physics

**NSG 7482**      **University of Maryland - College Park**      **2738**  
Astrophysical science theory lunar minerals

<i>Period</i>	<i>Obligations</i>	
09/01/78-08/31/80	FY81	TOTAL \$24,753
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tossell, J	HQ-SL/Quaide, W L	32-Geological Sci

**NSG 7555**      **University of Maryland - College Park**      **2739**  
X-ray clusters of galaxies, gas dynamics and relativistic particle  
propagation

<i>Period</i>	<i>Obligations</i>	
03/01/79-10/31/81	FY81	TOTAL \$40,608
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Scott, J S	HQ-SC/Kaluzienski, L J	11-Astronomy

**NAG 6-3**      **University of Maryland - Eastern Shore**      **2740**  
Phase one Study of microwave radiation for soil sterilization  
phase two Analysis of LANDSAT data for sediment in the  
Chesapeake Bay

<i>Period</i>	<i>Obligations</i>	
06/01/80-07/31/81	FY81	TOTAL \$28,085
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wutoh, J G	WFC/Oberholtzer, J D	99-Multi-Discip

**NAG 6-4**      **University of Maryland - Eastern Shore**      **2741**  
A survey of trace metal pollution in the lower Eastern Shore  
area

<i>Period</i>	<i>Obligations</i>	
07/01/80-12/31/81	FY81	TOTAL \$10,304
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hung, Y W	WFC/Trafford, G H	54-Env Biology

**NAG 6-6**      **University of Maryland - Eastern Shore**      **2742**  
Comparative analysis of Wallops wind and weather data Wind  
as a power source on the Eastern Shore

<i>Period</i>	<i>Obligations</i>	
08/01/80-07/31/81	FY81	TOTAL \$25,972
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chapin, E W	WFC/Trafford, G H	31-Atmos Sci
	WFC/Williams, M E	

**NAG 6-16**      **University of Maryland - Eastern Shore**      **2743**  
Atmospheric nitrogen dioxide measurements based on conversion  
to nitric oxide

<i>Period</i>	<i>Obligations</i>	
06/22/81-10/21/81	FY81 \$16,256	TOTAL \$16,256
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hung, Y W	WFC/Torres, A L	31-Atmos Sci

**NAS 5-26464**      **University of Maryland - Eastern Shore**      **2744**  
Development of a Medas system for microcomputers

<i>Period</i>	<i>Obligations</i>	
02/18/81-02/17/82	FY81 \$49,951	TOTAL \$49,951
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chapin, E W	GSFC/Alterescu, S	56-Medical Sciences

**NCC 6-3201**      **University of Maryland - Eastern Shore**      **2745**  
Improvement of technical library sciences

<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$80,981	TOTAL \$80,981
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, J C	WFC/Foster, J N	99-Multi-Discip

**NSG 6025**      **University of Maryland - Eastern Shore**      **2746**  
Surface drift currents in the ocean

<i>Period</i>	<i>Obligations</i>	
12/01/78-09/30/81	FY81	TOTAL \$24,934
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dudis, J J	WFC/Huang, N E	33-Oceanography

**NSG 6033**      **University of Maryland - Eastern Shore**      **2747**  
Investigation of aspergillus flavus

<i>Period</i>	<i>Obligations</i>	
06/01/79-06/30/81	FY81	TOTAL \$32,273
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Albano, M	WFC/Trafford, G H	51-Biological Sci

**NSG 6034**      **University of Maryland - Eastern Shore**      **2748**  
Aquatic vascular plants and algae as potential biological  
components of closed ecological life support systems

<i>Period</i>	<i>Obligations</i>	
06/01/79-06/30/81	FY81	TOTAL \$11,321
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gupta, G C	WFC/Trafford, G H	39-Env Sci, NEC

## NASA'S UNIVERSITY PROGRAM

### MARYLAND (Continued)

NSG 7470	University of Maryland - Eastern Shore	2749
Optimization of agricultural productivity in closed ecological life support systems		
Period	Obligations	
07/01/78-12/31/80	FY81	TOTAL \$60,000
Prin Invest	NASA Tech Officer	CASE Category
Joshi, J M	HQ-SB/Devincenzi, D L	55-Agriculture Sci

**MASSACHUSETTS**

<b>NAG 2-89</b>	<b>Boston College</b>	<b>2750</b>
<b>Dissociative recombination of o+2, no+ and n+2</b>		
<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$36,730	<b>TOTAL \$36,730</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Guberman, S L	ARC/Jaffe, R L	12-Chemistry

<b>NSG 7468</b>	<b>Boston College</b>	<b>2751</b>
Evaluate and assess the role of theorists in solar terrestrial research		
<i>Period</i>	<i>Obligations</i>	
06/01/78-12/31/83	FY81	TOTAL \$66,442
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Carovillano, R L	HQ-SC/Birmingham, T J	39-Env Sci, NEC

<b>NAGW 141</b>	<b>Boston University</b>	<b>2752</b>
The earliest occurrence and evolutionary development of microbial endoliths		
<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$39,900	TOTAL \$39,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Campbell, S E	HQ-SB/Devincenzi, D L	
Golubic, S		51-Biological Sci

NAS 5-25445	Boston University	2753
High resolution studies of ultraviolet lines in O-B stars		
<i>Period</i>	<i>Obligations</i>	
12/11/78-04/30/81	FY81	TOTAL \$7,404
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kamp, L W	GSFC/Bogges, A	11-Astronomy

<b>NAS 8-32844</b>	<b>Boston University</b>	<b>2754</b>
Use of the Space Shuttle to create plasma holes for ionospheric and radio astronomical studies		
<i>Period</i>	<i>Obligations</i>	
10/01/77-09/30/82	FY81 \$27,000	TOTAL \$94,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mendillo, M	MSFC/Guynes, B V	31-Atmos Sci
	MSFC/Ise, R	

NGR 22-004-025	Boston University	2755
Microbial contributions to the Precambrian Earth		
<i>Period</i>	<i>Obligations</i>	
12/15/70-10/31/81	FY81 \$65,910	TOTAL \$455,191
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Margulis, L	HQ-SB/Devincenzi, D L	
	HQ-SB/Bredt, J H	32-Geological Sci

<b>NGR 22-004-030</b>	<b>Boston University</b>	<b>2756</b>
Compressible unsteady potential aerodynamic flow around lifting bodies having arbitrary shapes and motions		
<i>Period</i>	<i>Obligations</i>	
12/08/71-12/31/81	FY81 \$76,000	TOTAL \$702,701
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Morino, L	LARC/Yates, E C, Jr	41-Aero Engr
Tseng, K	LARC/Desmarais, R N	

NGT 22-004-800	Boston University	2757
Unsteady transonic aerodynamics research		
<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$13,000	TOTAL \$23,585
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Morino, L	HQ-LC/Carter, C H	41-Aero Engr

NGT 22-004-801	Boston University	2758
Unsteady transonic aerodynamics research		
<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$13,000	TOTAL \$23,585
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Morino, L	HQ-LC/Carter, C H	41-Aero Engr

NGT 22-004-802		Boston University		2759
Graduate student researchers program				
<i>Period</i>		<i>Obligations</i>		
09/01/80-08/31/82	FY81	\$13,000	TOTAL	\$23,585
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Morino, L	HQ-LC/Carter, C H		41-Aero Engr	

NGT 22-008-803		Boston University	2760
Graduate student researchers program			
<i>Period</i>		<i>Obligations</i>	
06/01/81-05/31/82	FY81	\$13,000	TOTAL \$13,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Udelson, D	HO-LC/Carter, C	H	41-Aero Engr

<b>NSG 1644</b>	<b>Boston University</b>	<b>2761</b>
<b>Noisiness and annoyance of noise-tone complexes</b>		
<i>Period</i>	<i>Obligations</i>	
09/01/79-10/15/82	FY81 \$69,988	TOTAL \$99,259
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hellman, R D	LARC/Powell, C A	69-Psych, NEC
	LARC/Key, K F	

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NSG 5389 Boston University 2762**  
Development of computer models for the analysis of ultraviolet and optical stellar spectra  
*Period Obligations*  
06/15/79-06/14/80 FY81 TOTAL \$10,176  
*Pnn Invest NASA Tech Officer CASE Category*  
Kamp, L W GSFC/Leckronz, D S 11-Astronomy

**NSG 5407 Boston University 2763**  
Study of the propagation of geomagnetic pulsation signals  
*Period Obligations*  
09/15/79-12/14/81 FY81 \$24,985 TOTAL \$44,985  
*Pnn Invest NASA Tech Officer CASE Category*  
Hughes, W J GSFC/Corrigan, J P 11-Astronomy

**NSG 7588 Boston University 2764**  
Soil stabilization by a prokaryotic terrestrial mat in the Southwestern United States Implications for Precambrian terrestrial biota  
*Period Obligations*  
04/15/79-11/30/80 FY81 TOTAL \$16,000  
*Pnn Invest NASA Tech Officer CASE Category*  
Golubic, S HQ-SB/Devincenzi, D L 54-Env Biology

**NAG 8-413 Brandeis University 2765**  
A search for X-ray emission from a possible hot, diffuse gas surrounding the quasar 4C32 69  
*Period Obligations*  
07/01/81-06/30/82 FY81 \$8,951 TOTAL \$8,951  
*Pnn Invest NASA Tech Officer CASE Category*  
Wardle, J F MSFC/Stone, J F 11-Astronomy

**NAS 8-33343 Brandeis University 2766**  
Study of the X-ray properties of ring galaxies  
*Period Obligations*  
02/22/79-07/31/81 FY81 TOTAL \$1,000  
*Pnn Invest NASA Tech Officer CASE Category*  
Ghigo, F D MSFC/Jones, J B , Jr 11-Astronomy

**NAS 9-15147 Brandeis University 2767**  
Vestibular selection criteria development  
*Period Obligations*  
09/01/76-06/01/82 FY81 \$82,835 TOTAL \$265,578  
*Pnn Invest NASA Tech Officer CASE Category*  
Lackner, J R JSC/Homick, J L 59-Life Sci, NEC

**NSG 5419 Emmanuel College 2768**  
Phase and amplitude scintillation modelling at equatorial and high latitudes  
*Period Obligations*  
10/01/79-12/31/81 FY81 \$25,000 TOTAL \$48,000  
*Pnn Invest NASA Tech Officer CASE Category*  
Basu, S GSFC/Spencer, N W 31-Atmos Sci  
Aarons, J

**NAG 1-55 Harvard University 2769**  
Sources and sinks for nitrous oxide and experimental studies of sources of atmospheric gases  
*Period Obligations*  
04/03/80-04/30/82 FY81 \$203,744 TOTAL \$298,849  
*Pnn Invest NASA Tech Officer CASE Category*  
McElroy, M B LARC/Fishman, J 31-Atmos Sci  
Wofsy, S C

**NAG 5-72 Harvard University 2770**  
Observation of globular clusters and X-ray bursters  
*Period Obligations*  
06/01/80-11/30/81 FY81 TOTAL \$9,791  
*Pnn Invest NASA Tech Officer CASE Category*  
Grindlay, J E GSFC/Boggess, A 11-Astronomy  
Gursky, H  
Davis, R

**NAG 5-144 Harvard University 2771**  
High resolution ultraviolet cross section measurements of ozone  
*Period Obligations*  
03/01/81-02/28/82 FY81 \$63,330 TOTAL \$63,330  
*Pnn Invest NASA Tech Officer CASE Category*  
Parkinson, W H GSFC/Hudson, R D 13-Physics  
Freeman, D E HQ-EB/Watson, R T  
Yoshino, K

**NAG 5-189 Harvard University 2772**  
Observations of variable X-ray Seyfert galaxies  
*Period Obligations*  
08/01/81-01/31/82 FY81 \$6,000 TOTAL \$6,000  
*Pnn Invest NASA Tech Officer CASE Category*  
Geller, M GSFC/Boggess, A 11-Astronomy

**NAG 8-302 Harvard University 2773**  
Collaborative studies of solar-type and other coronae from High Energy Astronomical Observatory-B  
*Period Obligations*  
01/21/80-07/20/81 FY81 TOTAL \$2,901  
*Pnn Invest NASA Tech Officer CASE Category*  
Rosner, R MSFC/Jones, J B 11-Astronomy

**NAG 8-344 Harvard University 2774**  
Special observations of WU MA stars  
*Period Obligations*  
03/01/80-08/31/81 FY81 TOTAL \$7,114  
*Pnn Invest NASA Tech Officer CASE Category*  
Dupree, A K MSFC/Jones, J B 11-Astronomy  
Noyes, R W  
Crudace, R G

**NAG 9-17 Harvard University 2775**  
Angiotension antagonists and volume homeostasis Studies in man, intact animals and isolated tissues  
*Period Obligations*  
03/06/81-03/05/82 FY81 \$41,500 TOTAL \$41,500  
*Pnn Invest NASA Tech Officer CASE Category*  
Hollenberg, N K JSC/Leach, C S 56-Medical Sciences

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAGW 2** **Harvard University** **2776**  
Coronal plasma processes Heating and energetic balance of closed  
coronal structures  
*Period* *Obligations*  
11/01/79-03/31/81 **FY81** **TOTAL \$59,865**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Vaiana, G S HQ-SC/Chipman, E 13-Physics

**NAGW 79** **Harvard University** **2777**  
Theoretical program in plasma and magneto hydrodynamics  
processes relevant to the solar corona and its analogues  
*Period* *Obligations*  
06/01/80-05/31/82 **FY81 \$150,195** **TOTAL \$283,195**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rosner, R HQ-SC/Birmingham, T J 13-Physics

**NAS 2-10547** **Harvard University** **2778**  
Fluid and electrolyte homostasis during spaceflight Elucidation  
of mechanisms in a primate  
*Period* *Obligations*  
01/17/80-09/30/81 **FY81 \$26,789** **TOTAL \$66,139**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Moore-ede, M C ARC/Ferandin, J 51-Biological Sci  
ARC/Connolly, J

**NAS 5-3949** **Harvard University** **2779**  
Study and experiment for a high resolution ultraviolet telescope  
and spectrometer system  
*Period* *Obligations*  
01/28/65-06/30/81 **FY81** **TOTAL \$39,512,986**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hughes, B M MSFC/Snoddy, W C 11-Astronomy  
MSFC/Fields, S

**NAS 5-23494** **Harvard University** **2780**  
X-ray ultraviolet spectroheliometer experiment for synchronous  
meteorological satellite study effort  
*Period* *Obligations*  
05/19/76-09/30/81 **FY81** **TOTAL \$4,295,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Reeves, E M GSFC/Donley, J L 31-Atmos Sci

**NAS 5-24134** **Harvard University** **2781**  
Investigation of the upper atmosphere using data from AE  
satellites  
*Period* *Obligations*  
09/19/77-09/30/82 **FY81 \$114,000** **TOTAL \$287,864**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
McElroy, M B GSFC/Bullock, G D 31-Atmos Sci

**NAS 5-25677** **Harvard University** **2782**  
Very long baseline interferometer upgrading implementation,  
operation and maintenance of the Harvard radio astronomy  
station  
*Period* *Obligations*  
05/19/80-05/19/82 **FY81 \$23,181** **TOTAL \$154,410**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lilley, A E GSFC/Clark, T 99-Multi-Discip

**NAS 5-26557** **Harvard University** **2783**  
Preliminary definition phase effort for the solar irradiance  
spectrometer for Spacelab  
*Period* *Obligations*  
07/01/81-02/15/82 **FY81 \$50,000** **TOTAL \$50,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Parkinson, W H GSFC/Sing, M L 31-Atmos Sci

**NAS 6-3061** **Harvard University** **2784**  
Reel down/reel up technique for stratospheric and tropospheric  
observations  
*Period* *Obligations*  
10/15/79-06/15/82 **FY81** **TOTAL \$130,942**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Anderson, J G WFC/Ballance, C W 31-Atmos Sci

**NAS 6-3182** **Harvard University** **2785**  
Study of geostrophic mesoscale eddies in the North Atlantic  
*Period* *Obligations*  
05/01/81-06/30/82 **FY81 \$10,000** **TOTAL \$10,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Robinson, A R WFC/Leito, C D 33-Oceanography  
WFC/Parro, C

**NAS 8-31374** **Harvard University** **2786**  
Scientific data reduction and analysis activities ATM experiment  
S-054  
*Period* *Obligations*  
01/01/75-06/30/81 **FY81** **TOTAL \$1,149,959**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Vaiana, G S MSFC/Snoddy, W C 13-Physics  
MSFC/Fields, S

**NAS 8-32691** **Harvard University** **2787**  
Crystal nucleation in glass-forming alloy and pure metal melts  
under containerless and vibrationless conditions  
*Period* *Obligations*  
06/23/78-06/22/82 **FY81 \$46,000** **TOTAL \$160,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Turnbull, D MSFC/Fallon, R A 13-Physics  
Spaepen, F MSFC/Savage, W H

**NASW 2952** **Harvard University** **2788**  
An atmospheric and oceanic nitrous oxide measurement pro-  
gram  
*Period* *Obligations*  
06/15/76-12/14/80 **FY81** **TOTAL \$342,235**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
McElroy, M HQ-EB/Toth, R A 33-Oceanography  
Wofsy, S C HQ-EB/Tilford, S G

**NASA'S UNIVERSITY PROGRAM**  
**MASSACHUSETTS (Continued)**

**NASW 3242** **Harvard University** **2789**  
 In-situ studies of free radicals in the Earth's stratosphere techniques  
*Period* *Obligations*  
 07/05/78-03/31/82 **FY81 \$1,100,000 TOTAL \$3,744,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Anderson, J G HQ-EB/Seals, R K 31-Atmos Sci  
 HQ-EB/Tilford, S G

**NCA 2-284101** **Harvard University** **2790**  
 A mathematical model to assess and predict the effects of imposed work-rest schedules on the circadian timing system  
*Period* *Obligations*  
 06/01/81-05/31/82 **FY81 \$20,000 TOTAL \$20,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Moore-ede, M C ARC/Billings, C E 51-Biological Sci  
 Gander, P H  
 Kronauer, R E

**NCC 2-39** **Harvard University** **2791**  
 Identification and adaptive control of helicopter systems  
*Period* *Obligations*  
 11/01/79-12/31/81 **FY81 TOTAL \$86,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 McKinney, P ARC/Warmbrodt, W 41-Aero Engr

**NGL 22-007-006** **Harvard University** **2792**  
 Theoretical and experimental studies on ultraviolet solar physics  
*Period* *Obligations*  
 07/10/63-09/30/81 **FY81 \$284,000 TOTAL \$5,535,398**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Parkinson, W H HQ-SC/Chipman, E 13-Physics

**NGL 22-007-069** **Harvard University** **2793**  
 Infrared absorption spectrophotometry of organic extractives from Precambrian sediments  
*Period* *Obligations*  
 05/29/66-05/30/82 **FY81 \$43,878 TOTAL \$469,272**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Barghoorn, E S HQ-SB/Devincenzi, D L  
 32-Geological Sci

**NGL 22-007-228** **Harvard University** **2794**  
 Theoretical investigation of multiphase in Jupiter interior and possible relationship to behavior of outer atmospheric layers  
*Period* *Obligations*  
 12/15/71-10/31/81 **FY81 \$552,235 TOTAL \$2,123,223**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Goody, R M HQ-SL/Murphy, R E 31-Atmos Sci  
 Lindzen, R S HQ-SL/Brunk, W. E

**NGR 22-007-202** **Harvard University** **2795**  
 Investigations in the far ultraviolet solar spectrum  
*Period* *Obligations*  
 11/05/70-09/30/81 **FY81 TOTAL \$1,054,920**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Parkinson, W H HQ-SC/Bohlin, J D 11-Astronomy

**NGR 22-007-269** **Harvard University** **2796**  
 Theoretical research in planetary physics  
*Period* *Obligations*  
 09/01/73-02/28/82 **FY81 \$68,227 TOTAL \$444,073**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Cameron, A G HQ-SL/Quaide, W L 32-Geological Sci  
 HQ-SL/Brinton, H C

**NGR 22-007-272** **Harvard University** **2797**  
 Theoretical studies in space astronomy  
*Period* *Obligations*  
 09/01/73-08/31/81 **FY81 TOTAL \$322,748**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Cameron, A G HQ-SC/Kaluzienski, L J 11-Astronomy  
 HQ-SC/Holt, S S

**NSG 2031** **Harvard University** **2798**  
 Chemistry and dynamics of trace stratospheric gases  
*Period* *Obligations*  
 07/01/74-03/30/82 **FY81 \$157,492 TOTAL \$652,645**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 McElroy, M B HQ-EB/Chandra, S 31-Atmos Sci  
 HQ-EB/Watson, R T

**NSG 2265** **Harvard University** **2799**  
 Geometrical methods for nonlinear dynamics  
*Period* *Obligations*  
 09/01/77-11/01/81 **FY81 TOTAL \$114,681**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Byrnes, C I ARC/Doolin, B F 41-Aero Engr

**NSG 5128** **Harvard University** **2800**  
 Lyman alpha coronagraph research sounding rocket program  
*Period* *Obligations*  
 07/15/76-10/31/81 **FY81 \$276,000 TOTAL \$1,465,876**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Parkinson, W H GSFC/Guidotti, J G 13-Physics  
 Kohl, J L HQ-SC/Bohlin, J D

**NSG 5176** **Harvard University** **2801**  
 Research of high resolution vacuum ultraviolet absorption cross-sections of stratospheric molecules  
*Period* *Obligations*  
 06/01/77-05/31/82 **FY81 \$71,473 TOTAL \$289,073**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Parkinson, W H GSFC/Hudson, R D 13-Physics  
 Freeman, D E GSFC/Reed, E I  
 Yoshino, K

**NSG 5228** **Harvard University** **2802**  
 Dynamics and evaluation of Gulf Stream meanders  
*Period* *Obligations*  
 02/01/78-06/30/82 **FY81 \$90,000 TOTAL \$212,807**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Robinson, A R GSFC/Halem, M 33-Oceanography



**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

<b>NSG 5370</b>			<b>Harvard University</b>	<b>2803</b>
Ultraviolet studies of astronomical sources				
<i>Period</i>		<i>Obligations</i>		
06/01/79-11/30/80	FY81	TOTAL \$65,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Dupree, A K	GSFC/Boggess, A	11-Astronomy		
Dalgarno, A				
<b>NSG 7095</b>			<b>Harvard University</b>	<b>2804</b>
Reflection spectra of sodium doped ammonia ice				
<i>Period</i>		<i>Obligations</i>		
10/25/74-06/30/80	FY81	TOTAL \$189,565		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Pipkin, F M	HQ-SL/Murphy, R E	31-Atmos Sci		
<b>NSG 7176</b>			<b>Harvard University</b>	<b>2805</b>
Participation in NASA core funding				
<i>Period</i>		<i>Obligations</i>		
11/01/75-03/31/83	FY81	TOTAL \$1,354,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Field, G B	HQ-SP/Devlin, J F	19-Phys Sci, NEC		
McElroy, M B				
<b>NSG 7304</b>			<b>Harvard University</b>	<b>2806</b>
Absolute transition probabilities in ultraviolet spectra of interstellar molecules				
<i>Period</i>		<i>Obligations</i>		
12/15/76-02/13/82	FY81 \$55,000	TOTAL \$224,525		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Parkinson, W H	HQ-SC/Boggess, N W	31-Atmos Sci		
	HQ-SC/Weiler, E J			
<b>NSG 7497</b>			<b>Harvard University</b>	<b>2807</b>
Coronal plasma heating				
<i>Period</i>		<i>Obligations</i>		
10/01/78-09/30/81	FY81	TOTAL \$34,673		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Vaiana, G S	HQ-SC/Bohlin, J D	13-Physics		
<b>NSG 7513</b>			<b>Harvard University</b>	<b>2808</b>
Creep and fracture properties of the Moon				
<i>Period</i>		<i>Obligations</i>		
01/01/79-06/30/80	FY81	TOTAL \$27,127		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
O'connell, R J	HQ-SL/Quaide, W L	32-Geological Sci		
<b>NSG 7537</b>			<b>Harvard University</b>	<b>2809</b>
Coronal plasma processes Heating and energetic balance of closed coronal structures				
<i>Period</i>		<i>Obligations</i>		
01/01/79-12/31/80	FY81	TOTAL \$56,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Vaiana, G S	HQ-SC/Bohlin, J D	13-Physics		
<b>NSG 7648</b>			<b>Harvard University</b>	<b>2810</b>
Solar Maximum Mission Ground support programs at the Harvard radio astronomy station				
<i>Period</i>		<i>Obligations</i>		
07/01/79-09/30/81	FY81	TOTAL \$152,427		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Maxwell, A	HQ-SC/Chipman, E	13-Physics		
<b>NSG 9054</b>			<b>Harvard University</b>	<b>2811</b>
Fluid and electrolyte homeostasis during spaceflight Ground-based preparative studies in a primate				
<i>Period</i>		<i>Obligations</i>		
02/01/77-01/31/82	FY81 \$50,000	TOTAL \$233,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Moore-edo, M C	JSC/Leach, C S	56-Medical Sciences		
<b>NAG 1-2</b>			<b>Massachusetts Institute of Technology</b>	<b>2812</b>
Hybrid operator models for digitally-implemented control systems				
<i>Period</i>		<i>Obligations</i>		
12/01/79-05/31/81	FY81	TOTAL \$40,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Stein, G	LARC/Elliott, J R	45-Elec Engr		
	LARC/Price, D B			
<b>NAG 1-12</b>			<b>Massachusetts Institute of Technology</b>	<b>2813</b>
Investigation of some critical phenomena in the N-vortex system with application to large scale turbulent noise spectra				
<i>Period</i>		<i>Obligations</i>		
11/15/79-01/31/81	FY81	TOTAL \$20,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Young, J E	LARC/Hardin, J C	13-Physics		
<b>NAG 1-48</b>			<b>Massachusetts Institute of Technology</b>	<b>2814</b>
Development of single mode, high temperature continuous wave (CW) plumbum-stannaum-tellurium (PBSNTE) laser diodes				
<i>Period</i>		<i>Obligations</i>		
03/01/80-02/28/82	FY81 \$75,000	TOTAL \$150,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Fonstad, C G	LARC/Magee, C J	45-Elec Engr		
	LARC/Hendricks, H D			
<b>NAG 1-60</b>			<b>Massachusetts Institute of Technology</b>	<b>2815</b>
Research on unsteady, three-dimensional transonic flow				
<i>Period</i>		<i>Obligations</i>		
05/01/80-04/30/82	FY81 \$58,500	TOTAL \$103,902		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Harris, W L	LARC/Bland, S R	41-Aero Engr		
	LARC/Whitlow, W			
<b>NAG 1-92</b>			<b>Massachusetts Institute of Technology</b>	<b>2816</b>
Analysis of remote measurements of carbon monoxide from Convar 990 during monsoon experiment				
<i>Period</i>		<i>Obligations</i>		
09/01/80-12/31/81	FY81	TOTAL \$46,000		
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
Newell, R E	LARC/Reichle, H G	31-Atmos Sci		
	LARC/Wallio, H A			

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NAG 1-98**      **Massachusetts Institute of Technology**      **2817**  
Photovoltaic effect in ferroelectric ceramics  
*Period*      *Obligations*  
09/01/80-10/31/81      FY81      TOTAL \$53,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Epstein, D J      LARC/Hayes, P J      45-Elec Engr  
Linz, A  
Jenssen, H P

**NAG 1-100**      **Massachusetts Institute of Technology**      **2818**  
Microwave heating of supercooled water droplets  
*Period*      *Obligations*  
09/01/80-06/30/82      FY81      TOTAL \$73,726  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hollister, W M      LARC/Bailey, M C      13-Physics

**NAG 1-126**      **Massachusetts Institute of Technology**      **2819**  
Reliability issues in active control of large flexible space structures  
*Period*      *Obligations*  
11/15/80-11/14/81      FY81 \$90,016      TOTAL \$90,016  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Vandervelde, W      LARC/Montgomery, R C      41-Aero Engr  
LARC/Horner, G C

**NAG 1-140**      **Massachusetts Institute of Technology**      **2820**  
Combined applications of airborne traffic situation displays to terminal operations  
*Period*      *Obligations*  
12/19/80-12/18/81      FY81 \$56,000      TOTAL \$56,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Athans, M      LARC/Kelley, J R      41-Aero Engr  
LARC/Knox, C E

**NAG 1-164**      **Massachusetts Institute of Technology**      **2821**  
Study of noise, excess noise, and tunable local oscillator performance of lead-salt diode lasers  
*Period*      *Obligations*  
03/15/81-03/14/82      FY81 \$75,000      TOTAL \$75,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Freed, C      LARC/Katzberg, S J      13-Physics  
Fonstad, C G

**NAG 1-206**      **Massachusetts Institute of Technology**      **2822**  
Cooperative program to stimulate student involvement through undergraduate research opportunity program  
*Period*      *Obligations*  
09/01/81-08/31/82      FY81 \$54,948      TOTAL \$54,948  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Covert, E E      LARC/Kilgore, R A      41-Aero Engr  
Murman, E M      LARC/Boyden, R P  
Baron, J R

**NAG 2-12**      **Massachusetts Institute of Technology**      **2823**  
Research on visual vestibular interaction and its application to flight simulation  
*Period*      *Obligations*  
12/01/79-10/31/81      FY81 \$82,203      TOTAL \$147,203  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Young, L R      ARC/Stewart, J D      49-Engr, NEC  
Oman, C M  
Kenyon, R

**NAG 2-47**      **Massachusetts Institute of Technology**      **2824**  
Development of analytical techniques for rotor aerodynamic analysis  
*Period*      *Obligations*  
10/01/80-03/31/82      FY81      TOTAL \$58,627  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Miller, R H      ARC/Pizziali, R A      41-Aero Engr

**NAG 2-50**      **Massachusetts Institute of Technology**      **2825**  
A long baseline stellar interferometer for astronomy  
*Period*      *Obligations*  
08/01/80-10/31/81      FY81 \$20,000      TOTAL \$70,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Staelin, D H      ARC/Black, D C      11-Astronomy  
Shao, M

**NAG 2-88**      **Massachusetts Institute of Technology**      **2826**  
Habituation of novel visual vestibular environments with particular reference to space flight  
*Period*      *Obligations*  
01/16/81-01/15/82      FY81 \$120,014      TOTAL \$120,014  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Young, L R      ARC/Daunton, N G      51-Biological Sci  
Kenyon, R V      ARC/Suri, K  
Oman, C M

**NAG 2-90**      **Massachusetts Institute of Technology**      **2827**  
Carbon deposition in the Bosch process with ruthenium and ruthenium-iron alloy catalysts  
*Period*      *Obligations*  
01/01/81-12/31/81      FY81 \$45,000      TOTAL \$45,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Reid, R C      ARC/Quattrone, P D      59-Life Sci, NEC  
Manning, M P

**NAG 2-103**      **Massachusetts Institute of Technology**      **2828**  
The mutual relationship between central and peripheral vision  
*Period*      *Obligations*  
03/01/81-02/28/82      FY81 \$40,000      TOTAL \$40,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Kenyon, R V      ARC/Remington, R W      69-Psych, NEC  
Zeevi, Y Y      ARC/Huff, E

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

<b>NAG 2-105</b>			<b>Massachusetts Institute of Technology</b>			<b>2829</b>
Computational methods for non-linear vortex wake flow fields						
<i>Period</i>		<i>Obligations</i>				
02/15/81-01/14/82		FY81	\$49,998	TOTAL	\$49,998	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Murman, E M		ARC/Presley, L		41-Aero Engr		

<b>NAG 2-115</b>			<b>Massachusetts Institute of Technology</b>			<b>2830</b>
Computational methods for aerodynamic design using numerical optimization						
<i>Period</i>		<i>Obligations</i>				
06/01/81-05/31/82		FY81	\$50,011	TOTAL	\$50,011	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Murman, E M		ARC/Chapman, G T		41-Aero Engr		
		ARC/Hicks, R M				

<b>NAG 2-124</b>			<b>Massachusetts Institute of Technology</b>			<b>2831</b>
Vestibulocerebellar anatomy and histochemistry A study of neural structures underlying motion sickness						
<i>Period</i>		<i>Obligations</i>				
07/01/81-06/30/82		FY81	\$50,000	TOTAL	\$50,000	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Graybiel, A M		ARC/Mehler, W R		56-Medical Sciences		

<b>NAG 2-126</b>			<b>Massachusetts Institute of Technology</b>			<b>2832</b>
Neural mechanisms subserving head movements						
<i>Period</i>		<i>Obligations</i>				
07/01/81-06/30/82		FY81	\$32,000	TOTAL	\$32,000	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Bizzi, E		ARC/Daunton, N G		51-Biological Sci		
		ARC/Suri, K				

<b>NAG 2-132</b>			<b>Massachusetts Institute of Technology</b>			<b>2833</b>
Effects of consuming various foods and nutrients on subjective aspects of human performance and behavior						
<i>Period</i>		<i>Obligations</i>				
09/01/81-08/31/82		FY81	\$54,427	TOTAL	\$54,427	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Wurman, R J		ARC/Patton, R M		61-Biol Aspects		

<b>NAG 3-9</b>			<b>Massachusetts Institute of Technology</b>			<b>2834</b>
Research applied to transonic compressors in numerical fluid mechanics of inviscid flow and viscous flow						
<i>Period</i>		<i>Obligations</i>				
12/01/79-11/29/81		FY81	\$91,272	TOTAL	\$165,902	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Thompkins, W T		LERC/Chima, R V		41-Aero Engr		

<b>NAG 3-33</b>			<b>Massachusetts Institute of Technology</b>			<b>2835</b>
Advanced stress analysis of turbine engine structures						
<i>Period</i>		<i>Obligations</i>				
04/01/80-03/30/82		FY81	\$65,717	TOTAL	\$125,710	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Pian, T H		LERC/Chamis, C C		46-Mech Engr		
		LERC/Hirschbien, M S				

<b>NAG 3-82</b>			<b>Massachusetts Institute of Technology</b>			<b>2836</b>
Development and use of generalized internal combustion engine cycle simulations						
<i>Period</i>		<i>Obligations</i>				
06/23/80-12/30/81		FY81	\$19,774	TOTAL	\$79,836	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Haywood, J B		LERC/Cassidy, J F		41-Aero Engr		

<b>NAG 3-100</b>			<b>Massachusetts Institute of Technology</b>			<b>2837</b>
Conceptual design of an engineering test facility super conducting magnetohydrodynamic magnet system						
<i>Period</i>		<i>Obligations</i>				
08/22/80-10/15/81		FY81	\$60,000	TOTAL	\$130,000	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Marston, P G		LERC/Burkhart, J A		49-Engr, NEC		
Hatch, A M		LERC/Bercaw, R W				

<b>NAG 3-173</b>			<b>Massachusetts Institute of Technology</b>			<b>2838</b>
Effect of gravity on minimum ignition energies of premixed gases						
<i>Period</i>		<i>Obligations</i>				
04/06/81-04/05/82		FY81	\$42,000	TOTAL	\$42,000	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Wachman, H Y		LERC/Labus, T L		49-Engr, NEC		
Williams, G C						

<b>NAG 3-200</b>			<b>Massachusetts Institute of Technology</b>			<b>2839</b>
Structural response of a rotating bladed disk to rotor whirl						
<i>Period</i>		<i>Obligations</i>				
10/01/81-09/30/82		FY81	\$70,365	TOTAL	\$70,365	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Crawley, E F		LERC/Kielb, R E		41-Aero Engr		

<b>NAG 3-214</b>			<b>Massachusetts Institute of Technology</b>			<b>2840</b>
Graduate student researchers program in rotor flutter and vibration						
<i>Period</i>		<i>Obligations</i>				
09/25/81-09/24/82		FY81	\$29,996	TOTAL	\$29,996	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Dugunkji, J		LERC/Kielb, R E		41-Aero Engr		

<b>NAG 5-10</b>			<b>Massachusetts Institute of Technology</b>			<b>2841</b>
Improved microwave retrieval techniques for atmospheric temperatures, winds and humidity						
<i>Period</i>		<i>Obligations</i>				
02/01/80-01/31/82		FY81	\$85,000	TOTAL	\$169,000	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Staelin, D H		GSFC/Susskind, J		31-Atmos Sci		
Rosenkranz, P W						

<b>NAG 5-16</b>			<b>Massachusetts Institute of Technology</b>			<b>2842</b>
Research on theories for microwave remote sensing flow						
<i>Period</i>		<i>Obligations</i>				
03/01/80-02/28/81		FY81		TOTAL	\$30,000	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Kong, J A		GSFC/Chang, A T		32-Geological Sci		

# **NASA'S UNIVERSITY PROGRAM** **MASSACHUSETTS (Continued)**

**NAG 5-19**                      **Massachusetts Institute of Technology**                      **2843**  
 Seismocity and active tectonics of the Andes and the origin of the Altiplano

<i>Period</i>	<i>Obligations</i>	
03/01/80-04/30/82	FY81 \$70,000	TOTAL \$119,494
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Molnar, P	GSFC/Kouns, C W	32-Geological Sci
Burchfield, B C	GSFC/McAdoo, D C	

**NAG 5-41**                      **Massachusetts Institute of Technology**                      **2844**  
 Geophysical study of the structures and processes of the continental convergence zones

<i>Period</i>	<i>Obligations</i>	
05/01/80-04/30/82	FY81	TOTAL \$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Calvert, W	GSFC/Kouns, C W	32-Geological Sci
Molnar, P		

**NAG 5-43**                      **Massachusetts Institute of Technology**                      **2845**  
 Observations of the ultraviolet spectra of astronomical sources

<i>Period</i>	<i>Obligations</i>	
04/15/80-04/14/82	FY81	TOTAL \$7,705
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McClintock, J E	GSFC/Bogges, A	11-Astronomy

**NAG 5-44**                      **Massachusetts Institute of Technology**                      **2846**  
 Application of laser ranging and very long baseline interferometer data to a study of plate tectonic driving forces

<i>Period</i>	<i>Obligations</i>	
05/01/80-04/30/82	FY81 \$65,000	TOTAL \$133,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Solomon, S C	GSFC/Kouns, C W	32-Geological Sci
Toksoz, M N		

**NAG 5-89**                      **Massachusetts Institute of Technology**                      **2847**  
 The role of vegetation in the water balance of a landsurface

<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/81	FY81	TOTAL \$19,932
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Eagleson, P S	GSFC/Halem, M	32-Geological Sci

**NAG 5-134**                      **Massachusetts Institute of Technology**                      **2848**  
 Second-order Budyko-type parameterization of of landsurfaces hydrology

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$66,447	TOTAL \$66,447
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Eagleson, P S	GSFC/Shulka, J	31-Atmos Sci

**NAG 5-137**                      **Massachusetts Institute of Technology**                      **2849**  
 Mechanisms of interannual oceanatmosphere interactions

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$53,200	TOTAL \$53,200
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Frankignoul, C	GSFC/Shulka, J	31-Atmos Sci

**NAG 5-141**                      **Massachusetts Institute of Technology**                      **2850**  
 Remote sensing of vegetation of soil moisture

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$50,000	TOTAL \$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kong, J A	GSFC/Wang, J R	39-Env Sci, NEC
	GSFC/Schmugge, T	

**NAG 5-147**                      **Massachusetts Institute of Technology**                      **2851**  
 Characterization of potential sources of magnetic anomalies

<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$14,650	TOTAL \$14,650
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Spear, F S	GSFC/Kouns, C W	32-Geological Sci

**NAG 5-149**                      **Massachusetts Institute of Technology**                      **2852**  
 Study of seismic wave velocity structure in the downgoing slab

<i>Period</i>	<i>Obligations</i>	
04/15/81-04/14/82	FY81 \$45,000	TOTAL \$45,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Molnar, P	GSFC/Kouns, C W	11-Astronomy
Roecker, S W	GSFC/Frey, H V	

**NAG 5-170**                      **Massachusetts Institute of Technology**                      **2853**  
 Observations of X-ray binaries

<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$4,600	TOTAL \$4,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kallman, T R	GSFC/Bogges, A	11-Astronomy
Hammerschlag, G		
Vandenheuvel, E P		

**NAG 5-192**                      **Massachusetts Institute of Technology**                      **2854**  
 Absorption line studies of giant shells in the galactic disk

<i>Period</i>	<i>Obligations</i>	
07/01/81-11/30/81	FY81 \$6,000	TOTAL \$6,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cowie, L L	GSFC/Bogges, A	11-Astronomy

**NAG 6-9**                      **Massachusetts Institute of Technology**                      **2855**  
 Determination of general circulation of the ocean and marine geoid using satellite altimetry

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$79,095	TOTAL \$79,095
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wunch, C	WFC/Leitao, C D	33-Oceanography
	WFC/Huang, N E	

**NAG 9-12**                      **Massachusetts Institute of Technology**                      **2856**  
 Thermal histories of lunar rocks

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$58,500	TOTAL \$58,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Uhlmann, D R	JSC/Warner, J L	73-History

# NASA'S UNIVERSITY PROGRAM MASSACHUSETTS (Continued)

**NAGW 14**      **Massachusetts Institute of Technology**      **2857**  
Feasibility and development study of a mercuric iodide solid state spectrometer for advanced X-ray astrophysics facility

Period	Obligations
10/01/79-10/31/81	FY81 \$92,932      TOTAL \$182,245
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ricker, G R	HQ-SC/Kaluzienski, L J 11-Astronomy
	HQ-SC/Holt, S S

**NAGW 21**      **Massachusetts Institute of Technology**      **2858**  
Research program encompassed by space engineering

Period	Obligations
11/01/79-09/30/81	FY81 \$299,996      TOTAL \$596,753
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Mar, J W	HQ-RT/Greenfield, M A 42-Astro Engr
Kerrebrock, J L	HQ-RT/Harris, L A
Miller, R H	

**NAGW 49**      **Massachusetts Institute of Technology**      **2859**  
Thermal histories of lunar rocks

Period	Obligations
03/01/80-02/28/81	FY81      TOTAL \$54,931
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Uhlmann, D R	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/French, B M

**NAGW 68**      **Massachusetts Institute of Technology**      **2860**  
Studies of planetary upper atmospheres through occultations

Period	Obligations
07/01/80-06/30/82	FY81 \$40,000      TOTAL \$89,960
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Elliot, J E	HQ-SL/Murphy, R E 31-Atmos Sci
	HQ-SL/Brunk, W E

**NAGW 114**      **Massachusetts Institute of Technology**      **2861**  
Clays and the origin of life

Period	Obligations
10/01/80-10/31/81	FY81 \$65,000      TOTAL \$65,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hartman, H	HQ-SB/Geib, D S 12-Chemistry

**NAGW 165**      **Massachusetts Institute of Technology**      **2862**  
A program of extended analysis of Voyager plasma data with special emphasis on results obtained at Jupiter encounter

Period	Obligations
03/15/81-03/14/82	FY81 \$75,000      TOTAL \$75,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Bridge, H S	HQ-SC/Mayr, H G 13-Physics
	HQ-SC/Wiskerchen, M J

**NAGW 191**      **Massachusetts Institute of Technology**      **2863**  
Internal and surface evolution of the Galilean satellites

Period	Obligations
04/01/81-03/31/82	FY81 \$39,000      TOTAL \$39,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Solomon, S	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/Mitz, M A

**NAGW 208**      **Massachusetts Institute of Technology**      **2864**  
Theoretical astrophysical studies related to space astronomy

Period	Obligations
07/01/81-06/30/82	FY81 \$27,810      TOTAL \$27,810
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cowie, L L	HQ-SC/Weiler, E J 11-Astronomy
	HQ-SC/Boggess, N W

**NAGW 215**      **Massachusetts Institute of Technology**      **2865**  
Electromagnetic perturbations and scattering of Jupiter ring dust

Period	Obligations
06/01/81-05/31/82	FY81 \$24,900      TOTAL \$24,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Shapiro, I I	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/French, B M

**NAGW 232**      **Massachusetts Institute of Technology**      **2866**  
A search for Earth-crossing asteroids

Period	Obligations
09/01/81-05/31/82	FY81 \$55,000      TOTAL \$55,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Taff, L G	HQ-SL/Brunk, W E 11-Astronomy
	HQ-SL/Murphy, R E

**NAS 1-14932**      **Massachusetts Institute of Technology**      **2867**  
Science support for the stratospheric aerosol and gas experiment

Period	Obligations
07/06/77-09/30/79	FY81      TOTAL \$40,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cunnold, D M	LARC/McMaster, L R 31-Atmos Sci
	LARC/McCormick, M P

**NAS 1-15154**      **Massachusetts Institute of Technology**      **2868**  
A study of noise and performance of propellers for light aircraft

Period	Obligations
01/20/78-10/31/80	FY81      TOTAL \$372,035
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ingard, K V	LARC/Hubbard, H H 41-Aero Engr
Kerrebrock, J L	

**NAS 1-15268**      **Massachusetts Institute of Technology**      **2869**  
Air transportation research and analysis

Period	Obligations
03/15/78-03/14/81	FY81 \$75,000      TOTAL \$216,977
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Taneja, N K	LARC/Maddalon, D V 41-Aero Engr
Ausrotas, R A	

**NAS 2-9473**      **Massachusetts Institute of Technology**      **2870**  
Pioneer Venus data analysis of the radar altimeter experiment

Period	Obligations
01/20/77-09/30/81	FY81 \$148,510      TOTAL \$619,080
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Pettingill, G H	ARC/Fimmel, R O 11-Astronomy
	ARC/Dyer, J W

**NASA'S UNIVERSITY PROGRAM  
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**NAS 2-9483**      **Massachusetts Institute of Technology**      **2871**  
Pioneer Venus data analysis of the orbiting celestial mechanics  
(OCM) experiment

<i>Period</i>	<i>Obligations</i>	
02/17/78-09/30/81	FY81 \$120,724	TOTAL \$448,036
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shapiro, I I	ARC/Fimmel, R O	11-Astronomy

**NAS 2-10720**      **Massachusetts Institute of Technology**      **2872**  
Air traffic control simulation study

<i>Period</i>	<i>Obligations</i>	
05/01/80-10/31/81	FY81 \$51,620	TOTAL \$70,779
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simpson, R W	ARC/Nagel, D C	41-Aero Engr
Odoni, A R		

**NAS 5-11062**      **Massachusetts Institute of Technology**      **2873**  
IMP H and J plasma experiment

<i>Period</i>	<i>Obligations</i>	
05/17/68-10/31/79	FY81	TOTAL \$2,409,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bridge, H S	GSFC/Davis, M A	13-Physics

**NAS 5-22929**      **Massachusetts Institute of Technology**      **2874**  
Nimbus-G scanning multichannel microwave radiometer sensor

<i>Period</i>	<i>Obligations</i>	
01/28/76-01/28/82	FY81 \$20,000	TOTAL \$212,843
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Staelin, D H	GSFC/Gloersen, P	41-Aero Engr
Rosenkrang, P W	GSFC/Holweck, E	

**NAS 5-24441**      **Massachusetts Institute of Technology**      **2875**  
Reduction and analysis of data from MIT X-ray observatory  
on-board SAS-3 spacecraft

<i>Period</i>	<i>Obligations</i>	
10/01/78-03/31/82	FY81 \$1,117,955	TOTAL \$3,299,950
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clark, G W	GSFC/Corrigan, J P	11-Astronomy

**NAS 5-24493**      **Massachusetts Institute of Technology**      **2876**  
Design studies for far infrared absolute spectrophotometer for  
the Cosmic Background Explorer satellite

<i>Period</i>	<i>Obligations</i>	
03/01/78-03/30/82	FY81 \$60,240	TOTAL \$352,585
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Weiss, R	GSFC/Mather, J C	11-Astronomy
	GSFC/Donohoe, M J	

**NAS 5-25790**      **Massachusetts Institute of Technology**      **2877**  
Interplanetary monitoring platform-J/plasma experiment-data  
reduction and analysis

<i>Period</i>	<i>Obligations</i>	
11/01/79-12/15/82	FY81 \$100,000	TOTAL \$180,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bridge, H S	GSFC/Gemmell, J D	11-Astronomy

**NAS 5-25833**      **Massachusetts Institute of Technology**      **2878**  
Validation intercompanion, and use of laser ranging and radio  
interferometric data for the determination of geophysical  
parameters

<i>Period</i>	<i>Obligations</i>	
01/15/80-04/14/83	FY81 \$120,000	TOTAL \$314,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shapiro, I I	GSFC/Stephanides, C	19-Phys Sci, NEC

**NAS 8-27972**      **Massachusetts Institute of Technology**      **2879**  
Design, development, and operations of the AXR-2 integrated  
modulation collimator experiment under the HEAO program

<i>Period</i>	<i>Obligations</i>	
06/23/72-09/30/82	FY81 \$324,985	TOTAL \$2,124,478
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bradt, H V	MSFC/Stone, J F	11-Astronomy

**NAS 8-27975**      **Massachusetts Institute of Technology**      **2880**  
Design and development of the AGR-5 high energy X-ray  
experiment under the HEAO program

<i>Period</i>	<i>Obligations</i>	
06/23/72-09/30/82	FY81 \$504,953	TOTAL \$3,260,625
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bohm-vitense, E	MSFC/Stone, J F	11-Astronomy
	MSFC	

**NAS 8-30752**      **Massachusetts Institute of Technology**      **2881**  
Design, development and operations of the HEAO mission B  
telescope experiment

<i>Period</i>	<i>Obligations</i>	
06/01/74-09/30/82	FY81 \$576,000	TOTAL \$3,715,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clark, G W	MSFC/Stone, J F	11-Astronomy

**NAS 8-32994**      **Massachusetts Institute of Technology**      **2882**  
Research study growth of solid solution semiconductors

<i>Period</i>	<i>Obligations</i>	
07/17/78-01/15/81	FY81 \$8,227	TOTAL \$101,290
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hitt, A F	MSFC/Reeves, F A	13-Physics
	MSFC/Williams, J R	

**NAS 8-33137**      **Massachusetts Institute of Technology**      **2883**  
Apollo telescope mount guest investigator program for studying  
coronal sources of the intra stream structure of the solar wind

<i>Period</i>	<i>Obligations</i>	
10/30/78-03/01/82	FY81	TOTAL \$17,620
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sullivan, J D	MSFC/De Loach, A C	13-Physics
	MSFC/Snoddy, W C	

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**NAS 8-34381**      **Massachusetts Institute of Technology**      **2884**  
Space applications of automations, robotics and machine intelligence systems (ARAMIS)

<i>Period</i>	<i>Obligations</i>	
06/10/81-06/09/82	FY81 \$95,713	TOTAL \$95,713
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Unavailable	MSFC/Vontiesenhausen, G F	46-Mech Engr

**NAS 8-34501**      **Massachusetts Institute of Technology**      **2885**  
Structural assembly demonstration experiment (SADE) scientific experiment

<i>Period</i>	<i>Obligations</i>	
06/23/81-01/22/82	FY81 \$29,993	TOTAL \$29,993
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miller, R H	MSFC/Stokes, J W	31-Atmos Sci
	MSFC/Elrod, S E	

**NAS 8-34545**      **Massachusetts Institute of Technology**      **2886**  
Study for the participation in the science and mission design of a large space deployable shuttle based antenna for space VLBI mission

<i>Period</i>	<i>Obligations</i>	
07/13/81-09/10/82	FY81 \$82,137	TOTAL \$82,137
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Burke, B F	MSFC/Morgan, S H	11-Astronomy
Roberts, D		
Doxsey, R		

**NAS 9-15343**      **Massachusetts Institute of Technology**      **2887**  
Definition of Spacelab I experiment on vestibular experiments

<i>Period</i>	<i>Obligations</i>	
04/04/77-09/30/82	FY81 \$150,551	TOTAL \$1,057,551
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Young, L R	JSC/Evans, J S	59-Life Sci, NEC

**NAS 9-16008**      **Massachusetts Institute of Technology**      **2888**  
Evaluation of engineered foods for CELSS (closed ecological life support system)

<i>Period</i>	<i>Obligations</i>	
02/01/80-03/01/82	FY81 \$50,000	TOTAL \$100,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Karel, M	JSC/Sauer, R L	59-Life Sci, NEC

**NCA 2-425101**      **Massachusetts Institute of Technology**      **2889**  
High speed data flow computer architecture for the solution of the Navier-Stokes equations

<i>Period</i>	<i>Obligations</i>	
02/01/81-03/01/82	FY81 \$24,641	TOTAL \$24,641
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dennis, J B	ARC/Stevens, K G	22-Computer Science

**NCA 2-425801**      **Massachusetts Institute of Technology**      **2890**  
Participation of transfer RNA in the origin of protein biosynthesis

<i>Period</i>	<i>Obligations</i>	
11/01/77-06/30/81	FY81	TOTAL \$27,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rich, A	ARC/MacElroy, R D	51-Biological Sci

**NCC 1-23**      **Massachusetts Institute of Technology**      **2891**  
Cockpit display of traffic information (CDTI) crew function assessment

<i>Period</i>	<i>Obligations</i>	
07/01/79-10/31/81	FY81 \$64,225	TOTAL \$134,878
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tole, J R	LARC/Harris Sr, R L	41-Aero Engr
Young, L R		

**NCC 1-45**      **Massachusetts Institute of Technology**      **2892**  
Algorithms for computational fluid dynamics

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/81	FY81	TOTAL \$41,178
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Abarbanel, S S	LARC/Dwoyer, D L	41-Aero Engr

**NCC 3-1**      **Massachusetts Institute of Technology**      **2893**  
Molecular-orbital studies of metal-insulator interfaces

<i>Period</i>	<i>Obligations</i>	
07/01/79-06/28/82	FY81 \$39,000	TOTAL \$107,275
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, K H	LERC/Pepper, S V	19-Phys Sci, NEC
Wallace, S		

**NCC 3-15**      **Massachusetts Institute of Technology**      **2894**  
Methanol as a fuel extender for stationary gas turbine combustors

<i>Period</i>	<i>Obligations</i>	
09/01/80-02/19/82	FY81 \$70,000	TOTAL \$100,013
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hoult, D P	LERC/Brabbs, T A	12-Chemistry

**NCC 5-8**      **Massachusetts Institute of Technology**      **2895**  
Geophysical study of the structures and processes of the continental convergence zones

<i>Period</i>	<i>Obligations</i>	
05/01/79-04/30/80	FY81	TOTAL \$49,800
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Molnar, P	GSFC/Mead, G D	32-Geological Sci
Toksoz, M N		

**NGL 22-009-015**      **Massachusetts Institute of Technology**      **2896**  
Theoretical and experimental investigations of interplanetary medium and in gamma ray astronomy

<i>Period</i>	<i>Obligations</i>	
01/01/63-09/30/81	FY81 \$115,000	TOTAL \$4,941,339
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bridge, H S	HQ-SC/Mayr, H G	13-Physics
	HQ-SC/Schmerling, E R	

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**NGL 22-009-124** Massachusetts Institute of Technology 2897  
Control optimization stabilization and computation of algorithms  
for space applications

Period	Obligations
03/30/66-12/31/83	FY81 \$70,000 TOTAL \$1,072,289
Prin Invest	NASA Tech Officer CASE Category
Athans, M	ARC/Doolin, B F 49-Engr, NEC
Willsky, A S	

**NGL 22-009-383** Massachusetts Institute of Technology 2898  
Research in propulsion and power generation

Period	Obligations
01/16/69-08/31/84	FY81 \$70,000 TOTAL \$1,178,167
Prin Invest	NASA Tech Officer CASE Category
Covert, E E	LERC/Gorrell, W T 41-Aero Engr
Thompkins, W T	
Epstein, A H	

**NGL 22-009-521** Massachusetts Institute of Technology 2899  
Composition and structure of planetary atmospheres

Period	Obligations
08/10/70-06/30/82	FY81 \$100,000 TOTAL \$917,642
Prin Invest	NASA Tech Officer CASE Category
Lewis, J S	HQ-SL/Murphy, R E 31-Atmos Sci
	HQ-SL/Brunk, W E

**NGL 22-009-638** Massachusetts Institute of Technology 2900  
Research in space science

Period	Obligations
03/03/72-03/31/82	FY81 \$250,000 TOTAL \$2,220,000
Prin Invest	NASA Tech Officer CASE Category
Bridge, H S	HQ-SP/Taylor, T C 99-Multi-Discip
	HQ-SP/Heninger, L W

**NGL 22-009-640** Massachusetts Institute of Technology 2901  
Joint university research program future air transportation  
technological needs

Period	Obligations
11/16/71-01/31/84	FY81 \$75,000 TOTAL \$718,333
Prin Invest	NASA Tech Officer CASE Category
Simpson, R W	LARC/Downing, D R 41-Aero Engr

**NGR 22-009-005** Massachusetts Institute of Technology 2902  
Detection and identification of organic matter by mass spectrometry

Period	Obligations
12/01/61-10/31/81	FY81 \$86,400 TOTAL \$1,279,662
Prin Invest	NASA Tech Officer CASE Category
Biemann, K	HQ-SB/Devincenzi, D L
	51-Biological Sci

**NGR 22-009-277** Massachusetts Institute of Technology 2903  
The prebiotic synthesis of polynucleotides and polynucleotide-directed polypeptides

Period	Obligations
12/01/67-11/30/81	FY81 \$50,000 TOTAL \$677,370
Prin Invest	NASA Tech Officer CASE Category
Rich, A	HQ-SB/Devincenzi, D L 12-Chemistry

**NGR 22-009-339** Massachusetts Institute of Technology 2904  
Investigation of containment/control of fragments from bursting  
turbine rotors

Period	Obligations
06/14/68-05/14/81	FY81 \$8,150 TOTAL \$901,709
Prin Invest	NASA Tech Officer CASE Category
Witmer, E A	LERC/Chamis, C C 41-Aero Engr

**NGR 22-009-526** Massachusetts Institute of Technology 2905  
Astronomy in the region between 1 mm to 0.1 mm wavelengths

Period	Obligations
09/22/70-10/31/81	FY81 \$70,471 TOTAL \$597,875
Prin Invest	NASA Tech Officer CASE Category
Weiss, R	HQ-SC/Boggess, N W 11-Astronomy
	HQ-SC/Weiler, E J

**NGR 22-009-627** Massachusetts Institute of Technology 2906  
Control of serotonin-containing neurons in the brain, by plasma  
tryptophan

Period	Obligations
05/01/81-10/31/81	FY81 \$74,824 TOTAL \$640,184
Prin Invest	NASA Tech Officer CASE Category
Wurtman, R J	ARC/Winget, C M 56-Medical Sciences
Fernstrom, J D	

**NGR 22-009-672** Massachusetts Institute of Technology 2907  
Ground-based radar study of the Moon and planets

Period	Obligations
03/06/72-10/31/81	FY81 \$51,700 TOTAL \$466,020
Prin Invest	NASA Tech Officer CASE Category
Pettengill, G H	HQ-SL/Brunk, W E 11-Astronomy
	HQ-SL/Murphy, R E

**NGR 22-009-727** Massachusetts Institute of Technology 2908  
Study in numerical modeling of atmospheric phenomena

Period	Obligations
02/01/73-11/30/81	FY81 \$187,400 TOTAL \$1,096,563
Prin Invest	NASA Tech Officer CASE Category
Charney, J	GSFC/Halem, M 31-Atmos Sci
Stone, P H	

**NGR 22-009-730** Massachusetts Institute of Technology 2909  
X-ray astronomy experiments from sounding rockets

Period	Obligations
03/22/72-08/31/82	FY81 \$200,000 TOTAL \$1,640,000
Prin Invest	NASA Tech Officer CASE Category
Rappaport, S A	GSFC/Guidotti, J G 11-Astronomy
Boughan, E	HQ-SC/Holt, S S
Levine, A	

**NGR 22-009-839** Massachusetts Institute of Technology 2910  
Wideband recording system for very long baseline interferometry

Period	Obligations
04/01/74-03/15/82	FY81 \$149,970 TOTAL \$714,140
Prin Invest	NASA Tech Officer CASE Category
Shapiro, I I	GSFC/Clark, T A 32-Geological Sci
Counselman, C C	GSFC/Ryan, J W



# **NASA'S UNIVERSITY PROGRAM** **MASSACHUSETTS (Continued)**

## **NGT 22-009-900 Massachusetts Institute of Technology 2911** Visiting assistant professor program

Period	Obligations
04/01/80-03/31/83	FY81 \$59,500 TOTAL \$171,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Harrison, D E	HQ-EB/Chase, R P 33-Oceanography
Loreng, E N	HQ-EB/Wilson, W S

## **NGT 22-009-901 Massachusetts Institute of Technology 2912** Training program in computational fluid dynamics

Period	Obligations
01/01/81-12/31/81	FY81 \$75,000 TOTAL \$75,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Murman, E M	HQ-RT/Graves, R A, Jr 41-Aero Engr

## **NGT 22-009-902 Massachusetts Institute of Technology 2913** Graduate student researchers program

Period	Obligations
06/01/81-05/31/82	FY81 \$11,600 TOTAL \$11,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lewin, W	HQ-LC/Carter, C H 13-Physics

## **NSG 1323 Massachusetts Institute of Technology 2914** Research in algebraic manipulation

Period	Obligations
07/01/76-06/30/82	FY81 \$22,917 TOTAL \$203,984
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Moses, J	LARC/Shoosmith, J N 22-Computer Science

## **NSG 1502 Massachusetts Institute of Technology 2915** Closed-loop roll control for magnetic balance systems

Period	Obligations
02/01/78-01/31/82	FY81 \$122,390 TOTAL \$358,841
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Covert, E E	LARC/Boyden, R P 41-Aero Engr
Haldeman, C W	LARC/Kilgore, R A

## **NSG 1504 Massachusetts Institute of Technology 2916** Teflon fibril toughening of glassy polymers

Period	Obligations
02/01/78-06/30/81	FY81 TOTAL \$84,206
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
McGarry, F J	LARC/Johnston, N J 47-Materials Engr
Mandel, J F	LARC/Sykes, G F

## **NSG 1551 Massachusetts Institute of Technology 2917** Research on atomic hydrogen at cryogenic temperatures, with application to a hydrogen maser frequency standard

Period	Obligations
10/01/78-06/30/80	FY81 TOTAL \$85,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Greytak, T J	LARC/Singh, J J 13-Physics
Kleppner, D	

## **NSG 1583 Massachusetts Institute of Technology 2918** Research on helicopter rotor harmonic noise and broadband noise

Period	Obligations
12/01/78-11/30/81	FY81 \$80,794 TOTAL \$184,902
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Harris, W L	LARC/Brooks, T F 13-Physics
	LARC/Farassat, F

## **NSG 2010 Massachusetts Institute of Technology 2919** Study of impact on Space Shuttle on stratospheric ozone

Period	Obligations
03/01/74-01/31/82	FY81 \$275,000 TOTAL \$1,631,260
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Prinn, R G	ARC/Whitten, R C 31-Atmos Sci
Alaya, F N	ARC/Young, R E

## **NSG 2142 Massachusetts Institute of Technology 2920** Helicopter rotor noise

Period	Obligations
07/01/76-10/31/81	FY81 \$63,739 TOTAL \$251,712
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Widnall, S E	ARC/Johnson, W R 41-Aero Engr
	ARC/Mosher, M

## **NSG 2266 Massachusetts Institute of Technology 2921** An investigation of advanced helicopter rotors having individual-blade-control

Period	Obligations
11/01/77-10/31/81	FY81 \$100,000 TOTAL \$399,821
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ham, N D	ARC/Johnson, W R 41-Aero Engr
Whitaker, H P	ARC/McCloud, J L

## **NSG 2342 Massachusetts Institute of Technology 2922** Opportunity observations of occultations and eclipses

Period	Obligations
11/01/78-10/31/81	FY81 \$59,155 TOTAL \$125,910
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Elliot, J L	ARC/Haughney, L C 11-Astronomy
Dunham, E	
French, R	

## **NSG 2403 Massachusetts Institute of Technology 2923** Development of a prototype experiment for treating wastes to nutrients for plant growth

Period	Obligations
09/01/79-02/01/82	FY81 \$150,000 TOTAL \$475,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Modell, M	ARC/Wydeven, T 59-Life Sci, NEC
	ARC/Quattrone, P D

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**NSG 3017**      **Massachusetts Institute of Technology**      **2924**  
 Silicon surface phenomena related to energy conversion

<i>Period</i>	<i>Obligations</i>
05/01/74-02/20/82	FY81 \$59,500      TOTAL \$320,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Gatos, H C	LERC/Weinberg, I      47-Materials Engr
	LERC/Brandhorst, H. W , Jr

**NSG 3044**      **Massachusetts Institute of Technology**      **2925**  
 Special finite elements for the analysis of flaw growth and fracture in fiber composites

<i>Period</i>	<i>Obligations</i>
02/01/75-09/30/81	FY81      TOTAL \$249,195
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
McGarry, F J	LERC/Chamis, C C      49-Engr, NEC

**NSG 3079**      **Massachusetts Institute of Technology**      **2926**  
 Development of techniques for turbomachinery flutter clearance

<i>Period</i>	<i>Obligations</i>
07/15/75-08/30/82	FY81 \$40,424      TOTAL \$316,545
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kerrebrock, J L	LERC/Adamczyk, J J      41-Aero Engr

**NSG 3175**      **Massachusetts Institute of Technology**      **2927**  
 Development of electromagnetic mass drivers

<i>Period</i>	<i>Obligations</i>
12/01/77-12/31/81	FY81      TOTAL \$156,510
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kolm, H H	LERC/Kerslake, W R      42-Astro Engr

**NSG 3187**      **Massachusetts Institute of Technology**      **2928**  
 Theoretical and experimental study of the shear layer between two swirling streams

<i>Period</i>	<i>Obligations</i>
04/01/78-09/01/80	FY81      TOTAL \$80,175
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kerrebrock, J L	LERC/Braun, W H      49-Engr, NEC

**NSG 3208**      **Massachusetts Institute of Technology**      **2929**  
 Strut induced aerodynamic forging functions

<i>Period</i>	<i>Obligations</i>
07/05/78-09/29/82	FY81 \$48,637      TOTAL \$164,637
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Greitzer, E M	LERC/Adamczyk, J J      41-Aero Engr

**NSG 3210**      **Massachusetts Institute of Technology**      **2930**  
 Wave propagation in fiber composites relating to acoustic-ultrasonic NDE techniques

<i>Period</i>	<i>Obligations</i>
08/01/78-09/29/82	FY81      TOTAL \$89,905
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Williams, J H , Jr	LERC/Vary, A      47-Materials Engr

**NSG 3286**      **Massachusetts Institute of Technology**      **2931**  
 Viscous flow and crystallization behavior of hydrocarbon mixtures

<i>Period</i>	<i>Obligations</i>
08/02/79-08/28/83	FY81 \$55,000      TOTAL \$157,703
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Uhlmann, D R	LERC/Antoine, A C      12-Chemistry

**NSG 3303**      **Massachusetts Institute of Technology**      **2932**  
 Development of a methodology for horizontal axis wind turbine dynamic analysis

<i>Period</i>	<i>Obligations</i>
08/15/79-08/12/82	FY81 \$69,962      TOTAL \$205,858
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Dugundji, J	LERC/Janetzke, D C      41-Aero Engr
	LERC/Spera, D A

**NSG 3309**      **Massachusetts Institute of Technology**      **2933**  
 Application of array processors and specialized computers to numerical fluid mechanics

<i>Period</i>	<i>Obligations</i>
10/01/79-11/30/80	FY81      TOTAL \$25,602
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Thompkins, W T	LERC/Bishop, A R      41-Aero Engr

**NSG 5113**      **Massachusetts Institute of Technology**      **2934**  
 Research in stratospheric dynamics

<i>Period</i>	<i>Obligations</i>
07/01/76-06/30/82	FY81 \$99,500      TOTAL \$349,403
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Stone, P H	GSFC/Hansen, J E      31-Atmos Sci

**NSG 5166**      **Massachusetts Institute of Technology**      **2935**  
 Theoretical and numerical study of climate and climate change

<i>Period</i>	<i>Obligations</i>
03/21/77-12/20/82	FY81      TOTAL \$243,986
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Charney, J G	GSFC/Halem, M      31-Atmos Sci
Stone, P H	

**NSG 5306**      **Massachusetts Institute of Technology**      **2936**  
 Inference of effective soil properties from observed vegetal canopy density

<i>Period</i>	<i>Obligations</i>
11/15/78-03/31/80	FY81      TOTAL \$40,023
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Eagleson, P S	GSFC/Halem, M      32-Geological Sci

**NSG 7010**      **Massachusetts Institute of Technology**      **2937**  
 Precision selenodesy and lunar libration through very long baseline interferometry observation of ALSEPS

<i>Period</i>	<i>Obligations</i>
01/01/74-12/31/79	FY81      TOTAL \$355,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Counselman, H C C , III	HQ-SL/Quaide, W L      32-Geological Sci
	HQ-SL/French, B M

### NASA'S UNIVERSITY PROGRAM MASSACHUSETTS (Continued)

<b>NSG 7081</b>	<b>Massachusetts Institute of Technology</b>	<b>2938</b>
<b>Models of the composition, structure and evolution of the lunar interior</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/74-02/28/82	FY81 \$130,000	TOTAL \$1,174,960
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Toksoz, M N	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

NSG 7186		Massachusetts Institute of Technology	2939
An observatory search for and study of new IR sources reported in the AFCRL catalogue			
<i>Period</i>		<i>Obligations</i>	
12/01/75-01/31/82	FY81	TOTAL	\$154,414
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Kleinmann, S	HO-SC/Bogges, N W		11-Astronomy

NSG 7297		Massachusetts Institute of Technology		2940	
Studies of stress history of terrestrial lithospheres					
Period		Obligations			
01/01/77-12/31/81	FY81	\$49,000	TOTAL	\$169,500	
Prin Invest	NASA Tech Officer		CASE Category		
Solomon, S C	HO-SL/Bovce, J M		32-Geological Sci		

NSG 7328		Massachusetts Institute of Technology	2941
Research on integrated silicon balometers			
Period		Obligations	
03/01/77-11/30/80	FY81	TOTAL	\$181,960
Prin Invest	NASA Tech Officer	CASE Category	
Weiss, R	HQ-SC/Bogges, N	11-Astronomy	
	HQ-SC/Weiler, E J		

NSG 7331		Massachusetts Institute of Technology		2942	
Crystal growth of device quality gallium arsenite in space					
Period		Obligations			
04/01/79-03/31/84		FY81 \$770,000		TOTAL \$1,970,000	
Prin Invest		NASA Tech Officer		CASE Category	
Gatos, H C		HO-ET/Vitale, J A		47-Materials Engr	

NSG 7339		Massachusetts Institute of Technology		2943
X-ray balloon observations from the Northern and Southern Hemispheres				
Period		Obligations		
04/01/77-01/31/82		FY81	\$125,000	TOTAL \$540,000
Pnn Invest		NASA Tech Officer		CASE Category
Ricker, G R		HQ-SC/Holt, G S		11-Astronomy
		HQ-SC/Kaluzienski, L J		

NSG 7526		Massachusetts Institute of Technology	2944
Portable high-speed photometry systems for observing occultations			
<i>Period</i>		<i>Obligations</i>	
01/01/79-12/31/81	FY81	\$33,686	TOTAL \$153,118
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Elliot, J L	HQ-SL/Brunk, W E		11-Astronomy
	HO-SL/Murphy, R E		

NSG 7556	Massachusetts Institute of Technology	2945
Viking radio science data analysis and synthesis		
<i>Period</i>	<i>Obligations</i>	
03/01/79-10/30/81	FY81 \$160,000	TOTAL \$382,450
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shapiro, I I	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

NSG 7604		Massachusetts Institute of Technology		2946
Electronic spectra of heated lunar materials		Quantifying remote sensed spectra of hot planetary surfaces		
Period		Obligations		
05/01/79-01/31/82		FY81 \$88,490	TOTAL	\$237,477
Prin Invest		NASA Tech Officer		CASE Category
Burns, R G		HQ-SL/Quaide, W L	32-Geological Sci	
		HQ-SL/French, B M		

NSG 7638		Massachusetts Institute of Technology		2947
Mars orbiter and comet mission				
<i>Period</i>		<i>Obligations</i>		
04/15/79-12/31/81		FY81	\$115,000	TOTAL \$395,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
McCord, T	HQ-SL/French, B M		31-Atmos Sci	
	HQ-SL/Quaide, W L			

NSG 7643		Massachusetts Institute of Technology		2948
Experimental and theoretical investigations in high energy astrophysics				
Period		Obligations		
01/01/79-12/31/81	FY81	\$135,000	TOTAL	\$294,666
Prin Invest	NASA Tech Officer		CASE Category	
Clark, G	HQ-SC/Kaluzienski, L J		11-Astronomy	
	HQ-SC/Holt, S S			

<b>NSG 7645</b>	<b>Massachusetts Institute of Technology</b>	<b>2949</b>
<b>Materials processing research base</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/83	FY81 \$647,858	TOTAL \$1,469,378
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Witt, A F	HQ-ET/Vitale, J A	47-Materials Engr
	HQ-EM/Carruthers, J	

<b>NAG 2-51</b>	<b>Tufts University</b>	<b>2950</b>
<b>The human factors of avionic computers</b>		
<i>Period</i>	<i>Obligations</i>	
09/01/80-12/31/81	FY81 \$10,000	<b>TOTAL \$43,944</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chechile, R A	ARC/Palmer, E A	69-Psych, NEC
	ARC/Wempe, T E	

<b>NCC 2-93</b>	<b>Tufts University</b>	<b>2951</b>
<b>Simulator fidelity and numerosity effects in CDTI experimen-</b>		
<b>tation</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/80-10/31/81</b>	<b>FY81 \$100,348</b>	<b>TOTAL \$156,348</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Kreifeldt, J G</b>	<b>ARC/Hart, S G</b>	<b>99-Multi-Discip</b>

# NASA'S UNIVERSITY PROGRAM MASSACHUSETTS (Continued)

**NAG 1-54**      **University of Massachusetts - Amherst**      **2952**  
Remote sensing of ocean surface and ice conditions using  
microwaves

Period	Obligations	
09/01/80-09/30/82	FY81 \$67,825	TOTAL \$117,950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McIntosh, R E	LARC/Johnson, J M	45-Elec Engr

**NAG 1-115**      **University of Massachusetts - Amherst**      **2953**  
Tools supporting pre-implementation development of flight control  
software

Period	Obligations	
01/01/81-02/28/82	FY81 \$70,858	TOTAL \$70,858
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilden, J C	LARC/Senn, E H	22-Computer Science
Clarke, L A	LARC/Voigt, S J	

**NAG 1-163**      **University of Massachusetts - Amherst**      **2954**  
Analysis of microstrip antennas

Period	Obligations	
06/01/81-05/31/82	FY81 \$11,001	TOTAL \$11,001
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pozar, D M	LARC/Bailey, M C	45-Elec Engr

**NAGW 40**      **University of Massachusetts - Amherst**      **2955**  
Mars      Mineralogy of the surface materials

Period	Obligations	
01/01/80-12/31/81	FY81 \$85,000	TOTAL \$125,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Huguenin, R L	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/Boyce, J M	

**NAS 2-9129**      **University of Massachusetts - Amherst**      **2956**  
Interdisciplinary scientist and radar team member

Period	Obligations	
01/22/76-09/30/81	FY81 \$23,775	TOTAL \$92,231
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McGill, G E	ARC/Fimmel, R O	11-Astronomy
	ARC/Dyer, J W	

**NAS 5-26151**      **University of Massachusetts - Amherst**      **2957**  
Plan and establish the preliminary interface between the orbiter  
and the mixer receiver system

Period	Obligations	
05/05/80-08/18/81	FY81	TOTAL \$180,498
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Yngvesson, K S	GSFC/Eiband, A M	11-Astronomy

**NAS 5-26414**      **University of Massachusetts - Amherst**      **2958**  
Scientific investigation of the mineralogy of magnetic anomalies

Period	Obligations	
12/24/80-04/23/83	FY81 \$39,500	TOTAL \$39,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Haggerty, S E	GSFC/Oserhoff, H	32-Geological Sci

**NCC 3-10**      **University of Massachusetts - Amherst**      **2959**  
Tribology assessment

Period	Obligations	
05/19/80-08/31/81	FY81	TOTAL \$21,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilson, W R	LERC/Wedeven, L D	46-Mech Engr

**NGL 22-010-023**      **University of Massachusetts - Amherst**      **2960**  
Theoretical studies of diffuse reflection and transmission of  
radiation in planetary atmospheres

Period	Obligations	
05/24/67-08/31/82	FY81	TOTAL \$596,757
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Irvine, W M	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

**NGR 22-010-076**      **University of Massachusetts - Amherst**      **2961**  
Reconnaissance study of large geologic ring structures on Mars

Period	Obligations	
05/19/70-01/31/82	FY81 \$43,000	TOTAL \$348,775
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McGill, G E	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7397**      **University of Massachusetts - Amherst**      **2962**  
Surface chemistry and the search for life on Mars

Period	Obligations	
10/01/77-09/30/81	FY81 \$46,000	TOTAL \$153,993
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Huguenin, R L	HQ-SB/Geib, D	12-Chemistry

**NSG 7405**      **University of Massachusetts - Amherst**      **2963**  
Mineralogy and weathering processes on Mars

Period	Obligations	
10/01/77-10/31/81	FY81 \$45,000	TOTAL \$139,868
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Huguenin, R L	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

**NSG 7549**      **University of Massachusetts - Amherst**      **2964**  
The opaque mineral chemistry of allende, basaltic achondrites,  
and the Antarctic meteorite suite

Period	Obligations	
05/01/79-01/31/82	FY81 \$47,500	TOTAL \$139,682
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Haggerty, S E	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7571**      **University of Massachusetts - Amherst**      **2965**  
Structural evolution and stress history of the Tharsis region of  
Mars

Period	Obligations	
05/01/79-04/30/80	FY81	TOTAL \$23,460
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wise, D	HQ-SL/Dwornik, S E	32-Geological Sci
	HQ-SL/Boyce, J M	

**NASA'S UNIVERSITY PROGRAM  
MASSACHUSETTS (Continued)**

**NSG 9069 University of Massachusetts - Amherst 2966**  
Comparative geochemical and petrological study of lunar and  
terrestrial basaltic volcanism

<i>Period</i>	<i>Obligations</i>	
05/15/78-01/31/82	FY81 \$32,700	TOTAL \$109,791
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rhodes, J M	JSC/Warner, J L	32-Geological Sci

**NSG 5376 Wheaton College 2967**  
Ultraviolet spectrophotometry of planetary nebulae

<i>Period</i>	<i>Obligations</i>	
07/01/79-06/30/82	FY81 \$5,116	TOTAL \$11,216
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Barker, T	GSFC/Bogges, A	11-Astronomy

**NAG 1-91 Woods Hole Oceanographic Institution 2968**  
Acoustic profiling of ocean currents

<i>Period</i>	<i>Obligations</i>	
07/15/80-05/14/82	FY81 \$260,798	TOTAL \$310,798
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Joyce, T M	LARC/Allano, F	33-Oceanography

**NAG 2-91 Woods Hole Oceanographic Institution 2969**  
Gravity, topography and crustal evolution of Venus

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$25,000	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bowin, C O	ARC/Fimmel, R O	32-Geological Sci

**NAG 5-8 Woods Hole Oceanographic Institution 2970**  
Oceanic eddy heat and momentum fluxes at the continental  
margin

<i>Period</i>	<i>Obligations</i>	
02/01/80-07/31/81	FY81	TOTAL \$9,602
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Haidvogel, D B	GSFC/Halem, M	33-Oceanography

**NAG 5-18 Woods Hole Oceanographic Institution 2971**  
Upper mantle heterogeneity Comparison of region south of  
Australia with the Philippine Basin

<i>Period</i>	<i>Obligations</i>	
03/01/80-08/31/81	FY81	TOTAL \$41,659
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brown, C	GSFC/Smith, D E	32-Geological Sci

**NAG 5-185 Woods Hole Oceanographic Institution 2972**  
Warm water mass formation

<i>Period</i>	<i>Obligations</i>	
05/15/81-05/14/82	FY81 \$88,165	TOTAL \$88,165
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gaddy, G T	GSFC/Rao, D B	32-Geological Sci

**NAGW 241 Woods Hole Oceanographic Institution 2973**  
Support for the development and coordination of remote sensing  
activities

<i>Period</i>	<i>Obligations</i>	
08/01/81-01/31/83	FY81 \$115,630	TOTAL \$115,630
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Spencer, D W	HQ-EB/McGoldrick, L F	
	HQ-EB/Wilson, W S	39-Env Sci, NEC

**NAS 1-16606 Woods Hole Oceanographic Institution 2974**  
Study of dynamics of phytoplankton patches on Nantucket  
shoals

<i>Period</i>	<i>Obligations</i>	
04/02/81-04/01/82	FY81 \$25,180	TOTAL \$25,180
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Beardsley, R C	LARC/Saia, W E	33-Oceanography
Limeburner, R	LARC/Hypes, W D	

**NAS 6-3160 Woods Hole Oceanographic Institution 2975**  
Development of laser-operated phytoplankton profiling system

<i>Period</i>	<i>Obligations</i>	
03/02/81-03/01/82	FY81 \$12,533	TOTAL \$12,533
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Evans, G	WFC/Hoge, F E	19-Phys Sci, NEC
	WFC/McGoogan, J T	

**NAS 6-3166 Woods Hole Oceanographic Institution 2976**  
Initial investigation of seawater fluorescence absorption properties  
and their relevance to oceanic lidar data interpretation

<i>Period</i>	<i>Obligations</i>	
02/01/81-12/31/81	FY81 \$8,494	TOTAL \$8,494
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zafinou, O C	WFC/Hoge, F E	33-Oceanography
	WFC/McGoogan, J T	

**NGT 22-014-800 Woods Hole Oceanographic Institution 2977**  
Graduate student training program in oceanographic remote  
sensing

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$70,917	TOTAL \$70,917
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hollister, C D	HQ-EB/McGoldrick, L F	
	HQ-EB/Wilson, W S	33-Oceanography

**NSG 7154 Worcester Polytechnic Institute 2978**  
Mission-oriented studies of planetary biology

<i>Period</i>	<i>Obligations</i>	
10/01/75-03/31/81	FY81 \$50,000	TOTAL \$586,390
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Danielli, J F	HQ-SB/Devincenzi, D L	
		51-Biological Sci

**NASA'S UNIVERSITY PROGRAM**  
**MASSACHUSETTS (Continued)**

**NSG 7392** Worcester Polytechnic Institute **2979**  
 Martian chemistry relevant to biological activity and the Viking  
 labeled release experiments

Period	Obligations
12/15/77-07/31/82	FY81 \$41,608 TOTAL \$160,840
Prin Invest	NASA Tech Officer CASE Category
Plumb, R C	HQ-SB/Devincenzi, D L 12-Chemistry

**MICHIGAN**

**NAG 2-86** Michigan State University **2980**  
 Vorticity measurements in a forced plane shear layer

Period	Obligations
10/01/80-12/31/81	FY81 \$50,079 TOTAL \$50,079
Prin Invest	NASA Tech Officer CASE Category
Foss, J F	ARC/Rubesin, M W 41-Aero Engr
	ARC/Marvin, J G

**NAG 3-51** Michigan State University **2981**  
 Experimental evaluation criteria for constitutive models of  
 time-dependents cyclic plasticity

Period	Obligations
06/02/80-05/30/82	FY81 \$48,000 TOTAL \$91,932
Prin Invest	NASA Tech Officer CASE Category
Martin, J F	LERC/Halford, G R 47-Materials Engr
	LERC/Hirschberg, M H

**NAG 3-93** Michigan State University **2982**  
 A miniature nanosecond spark detector for liquid chromatographic  
 analysis of crude oils and fuels

Period	Obligations
09/15/80-09/13/82	FY81 \$33,004 TOTAL \$67,962
Prin Invest	NASA Tech Officer CASE Category
Crouch, S R	LERC/Seng, G T 12-Chemistry

**NAG 3-107** Michigan State University **2983**  
 Development and application of triple quadrupole mass spectrom-  
 etry for jet fuel characterization

Period	Obligations
10/13/80-10/11/83	FY81 \$113,430 TOTAL \$168,681
Prin Invest	NASA Tech Officer CASE Category
Enke, C G.	LERC/Seng, G T 12-Chemistry

**NAGW 97** Michigan State University **2984**  
 An attempt to localize and identify the gravity sensing mechanism  
 of plants

Period	Obligations
08/01/80-07/31/82	FY81 \$62,912 TOTAL \$128,178
Prin Invest	NASA Tech Officer CASE Category
Bandurski, R S	HQ-SB/Halstead, T W 51-Biological Sci

**NAS 5-26445** Michigan State University **2985**  
 High data rate (multigigabit) satellite communication system  
 study

Period	Obligations
01/30/81-02/28/82	FY81 \$39,418 TOTAL \$39,418
Prin Invest	NASA Tech Officer CASE Category
Siegel, M	GSFC/Santarpia, D E 45-Elec Engr
	GSFC/Shu, P K

**NGL 23-004-083** Michigan State University **2986**  
 Use of remote sensing for land use policy formulation

Period	Obligations
06/08/72-05/31/84	FY81 \$110,000 TOTAL \$1,210,000
Prin Invest	NASA Tech Officer CASE Category
Boylan, M G	HQ-ET/Vitale, J A 39-Env Sci, NEC

**NSG 3299** Michigan State University **2987**  
 Generation of free radicals and ions for spacecraft propulsion

Period	Obligations
08/15/79-11/13/81	FY81 \$140,000 TOTAL \$296,229
Prin Invest	NASA Tech Officer CASE Category
Asmussen, J	LERC/Nakanishi, S 19-Phys Sci, NEC
Hawley, M C	
Kerber, R L	

**NSG 7293** Michigan State University **2988**  
 Radiative fluid dynamic studies of the Sun and compact H II  
 regions

Period	Obligations
10/01/76-11/30/81	FY81 \$18,222 TOTAL \$77,492
Prin Invest	NASA Tech Officer CASE Category
Stein, R F	HQ-SC/Chipman, E 13-Physics

**NAG 3-216** Michigan Technological University **2989**  
 Structure property effects of tantalum additions to nickel-base  
 super alloys

Period	Obligations
10/20/81-10/19/83	FY81 \$197,037 TOTAL \$197,037
Prin Invest	NASA Tech Officer CASE Category
Heckel, R W	LERC/Dreshfield, R L 12-Chemistry
Pletka, B J	LERC/Scheuermann, C M
Koss, D A	

**NAS 8-33727** Michigan Technological University **2990**  
 Materials processing in space experiment The influence of gravity  
 on the solidification of monotectic alloys

Period	Obligations
09/01/80-08/31/83	FY81 \$35,000 TOTAL \$82,000
Prin Invest	NASA Tech Officer CASE Category
Hellawell, A	MSFC/Reeves, F A 19-Phys Sci, NEC
	MSFC/Williams, J R

### NASA'S UNIVERSITY PROGRAM MICHIGAN (Continued)

NSG 3215		Michigan Technological University	2991
Diffusion modeling of cyclic oxidation transport processes in Ni-base alloys			
Period		Obligations	
08/01/78-07/30/81	FY81	TOTAL \$91,381	
Prin Invest	NASA Tech Officer	CASE Category	
Heckel, R W	LERC/Barrett, C A	47-Materials Engr	
	LERC/Lowell, C E		

<b>NAG 3-148</b>	<b>Spring Arbor College</b>	<b>2992</b>
Chemical and electrochemical aspects of the chromic/chromous electrode reaction in the NASA-redox energy storage system		
<i>Period</i>	<i>Obligations</i>	
01/10/81-01/09/82	FY81 \$12,000	TOTAL \$12,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, D A	LERC/Charleson, J A	12-Chemistry

<b>NAG 1-93</b>		<b>University of Michigan - Ann Arbor</b>		<b>2993</b>
<b>Halogen occultation experiment</b>				
<i>Period</i>		<i>Obligations</i>		
07/17/80-10/31/81		FY81 \$24,993	TOTAL \$50,080	
<i>Pnn</i>	<i>Invest</i>	<i>NASA Tech</i>	<i>Officer</i>	<i>CASE Category</i>
Drayson, S	R	LARC/Sullivan, E	M	31-Atmos Sci
		LARC/Russell, J	M	

<b>NAG 2-118</b>	<b>University of Michigan - Ann Arbor</b>		<b>2994</b>
<b>Computer tomography of flows external to test models</b>			
<i>Period</i>		<i>Obligations</i>	
06/01/81-05/31/82	FY81	\$39,879	TOTAL \$39,879
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Vest, C M	ARC/Lee, G		41-Aero Engr

NAG 3-147		University of Michigan - Ann Arbor	2995
Development of a fast algorithm for combustion kinetics calculations			
<i>Period</i>	<i>Obligations</i>		
01/01/81-12/31/82	FY81	\$54,630	TOTAL \$54,630
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Radhakrishnan, K	LERC/Marek, C J		46-Mech Engr

<b>NAG 3-168</b>	<b>University of Michigan - Ann Arbor</b>	<b>2996</b>
<b>A technology survey of the reciprocating aircraft engine liquid cooling system</b>		
<i>Period</i>	<i>Obligations</i>	
03/25/81-03/24/82	FY81 \$19,624	TOTAL \$19,624
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Vangunst, R W	LERC/Abdalla, K L	41-Aero Engr
	LERC/Szanca, E M	

<b>NAG 3-185</b>	<b>University of Michigan - Ann Arbor</b>	<b>2997</b>
<b>Research on social aspects of photovoltaic applications</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/25/81-11/24/82</b>	<b>FY81 \$115,231</b>	<b>TOTAL \$115,231</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Roberts, A F</b>	<b>LERC/Marsik, S J</b>	<b>79-Soc Sci, NEC</b>
	<b>LERC/Bifano, W J</b>	

<b>NAG 5-109</b>	<b>University of Michigan - Ann Arbor</b>	<b>2998</b>
<b>Doppler line profile measurement of the Jovian lyman alpha emission</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/80-04/30/82	FY81 \$9,276	TOTAL \$16,276
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Atreya, S K	GSFC/Corrigan, J P	11-Astronomy

NAG 5-140		University of Michigan - Ann Arbor	2999
Processes of production and loss in the auroral zone and midlatitudes			
<i>Period</i>		<i>Obligations</i>	
02/01/81-01/31/82	FY81	\$24,714	TOTAL \$24,714
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Sharp, W E	GSFC/Spencer, N W		31-Atmos Sci

NAG 5-183		University of Michigan - Ann Arbor		3000
Observations of symbiotic stars				
Period		Obligations		
05/01/81-04/30/82		FY81 \$6,000	TOTAL \$6,000	
Pnn Invest		NASA Tech Officer		CASE Category
Kirshner, R P		GSFC/Michalitsianos, A G		
11-Astronomy				

<b>NAG 8-318</b>	<b>University of Michigan - Ann Arbor</b>	<b>3001</b>
<b>An X-ray study of AM Canum Venaticorum (a star)</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/17/80-03/16/81</b>	<b>FY81</b>	<b>TOTAL \$800</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Patterson, J</b>	<b>MSFC/Jones, J B</b>	<b>11-Astronomy</b>
<b>Robinson, E L</b>		
<b>Nather, R E</b>		

<b>NAG 8-341</b>	<b>University of Michigan - Ann Arbor</b>	<b>3002</b>
Search for X-rays from the Shakkbazyan I group of galaxies and search for X-rays from the supernova remnants in NCG 4449		
<i>Period</i>	<i>Obligations</i>	
03/01/80-07/31/81	FY81	TOTAL \$13,896
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kirshner, R P	MSFC/Jones, J B	11-Astronomy
Winkler, P F		

NAG 8-354		University of Michigan - Ann Arbor		3003
High resolution X-ray observations of CD galaxies in rich clusters				
<i>Period</i>		<i>Obligations</i>		
11/26/80-03/25/82		FY81	\$1,378	TOTAL \$1,378
<i>Pnn Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Richstone, D		MSFC/Stone, J	F	11-Astronomy

**NAG 8-383**                      **University of Michigan - Ann Arbor**                      **3004**  
A search for globular cluster winds from soft X-ray observations,  
the doubly-pulsing X-ray source 4u1145-6 =hd102567, hot  
components in symbiotic stars

<i>Period</i>	<i>Obligations</i>	
11/26/80-05/25/82	FY81 \$2,607	<b>TOTAL \$2,607</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cowley, A P	MSFC/Stone, J F	11-Astronomy

### NASA'S UNIVERSITY PROGRAM MICHIGAN (Continued)

<b>NAG 8-414</b>	<b>University of Michigan - Ann Arbor</b>	<b>3005</b>
<b>A search for an X-ray halo surrounding NCG 4565</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/15/81-07/14/82</b>	<b>FY81 \$4,942</b>	<b>TOTAL \$4,942</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Hegy1, D J</b>	<b>MSFC/Stone, J F</b>	<b>11-Astronomy</b>

NAGW 15		University of Michigan - Ann Arbor		3006
Study in planetary aeronomy				
<i>Period</i>		<i>Obligations</i>		
12/01/79-11/30/81	FY81	\$40,200	TOTAL	\$67,700
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Cravens, T E	HQ-SL/Murphy, R E		31-Atmos Sci	
Nagy, A F	HQ-SL/Brunk, W E			

<b>NAGW 29</b>	<b>University of Michigan - Ann Arbor</b>	<b>3007</b>
<b>A ground based comparative study of the effects of weightlessness on the development of amphibian eggs</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/15/79-12/14/81</b>	<b>FY81 \$60,000</b>	<b>TOTAL \$120,000</b>
<i>Prnt Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Nacc, G W</b>	<b>HO-SB/Halstead, T W</b>	<b>51-Biological Sci</b>

<b>NAGW 32</b>	<b>University of Michigan - Ann Arbor</b>	<b>3008</b>
Horizontal mapping of the thermal structures of the mesospheres at 85 and 97 kilometers		
<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/81	FY81	TOTAL \$38,204
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meriwether, J W	HQ-EB/Toth, R A	31-Atmos Sci
	HQ-EB/Seals, R K, Jr	

NAGW 34		University of Michigan - Ann Arbor		3009
Investigation of the negative geotropic response in geosensitive pulvini of the oat plant (avena sativa)				
Period		Obligations		
02/01/80-01/31/82	FY81	\$45,751	TOTAL	\$88,251
Prin Invest	NASA Tech Officer		CASE Category	
Kaufman, P B	HQ-SB/Halstead, T W	51-Biological Sci		

<b>NAGW 176</b>	<b>University of Michigan - Ann Arbor</b>		<b>3010</b>
<b>Interaction of biota and atmospheric</b>		<b>The geological record</b>	
<i>Period</i>	<i>Obligations</i>		
<b>04/01/81-03/31/82</b>	<b>FY81 \$80,907</b>	<b>TOTAL \$80,907</b>	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
<b>Walker, J C</b>	<b>HO-SB/Devincenzi, D L</b>	<b>12-Chemistry</b>	

<b>NAS 1-14394</b>	<b>University of Michigan - Ann Arbor</b>	<b>3011</b>
Science support for the limb infrared monitor of the stratosphere experiment		
<i>Period</i>	<i>Obligations</i>	
<b>04/09/76-10/31/80</b>	<b>FY81</b>	<b>TOTAL \$110,509</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Drayson, S R</b>	<b>LARC/Russell, J M, III</b>	<b>31-Atmos Sci</b>
	<b>LARC/James, R L, Jr</b>	

NAS 1-16107		University of Michigan - Ann Arbor	3012
Sampling errors for regression statistics from complex sample designs			
<i>Period</i>		<i>Obligations</i>	
05/16/80-03/01/82	FY81 \$10,000	TOTAL	\$17,607
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Kalton, G	LARC/Clevenson, S	79-Soc Sci, NEC	
Vinter, S			

<b>NAS 2-9126</b>	<b>University of Michigan - Ann Arbor</b>	<b>3013</b>
Interdisciplinary scientist, Pioneer Venus program		
<i>Period</i>	<i>Obligations</i>	
02/10/76-09/30/81	FY81 \$122,146	TOTAL \$392,209
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Donahue, T M	ARC/Fimmel, R	11-Astronomy
	ARC/Dver, J	

<b>NAS 2-9130</b>	<b>University of Michigan - Ann Arbor</b>	<b>3014</b>
<b>Interdisciplinary scientist, Pioneer Venus program</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/09/76-09/30/81</b>	<b>FY81 \$79,248</b>	<b>TOTAL \$281,928</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Nagy, A F</b>	<b>ARC/Fimmel, R</b>	<b>11-Astronomy</b>
	<b>ARC/Dyer, J W</b>	

<b>NAS 2-10534</b>		<b>University of Michigan - Ann Arbor</b>	<b>3015</b>
<b>Febrile responses during spaceflight</b>			
<i>Period</i>		<i>Obligations</i>	
01/17/80-09/30/81	FY81	TOTAL	\$26,712
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Kluger, M J	ARC/Ferandin, J A	51-Biological Sci	
	ARC/Martens, J H		

<b>NAS 2-10535</b>	<b>University of Michigan - Ann Arbor</b>	<b>3016</b>
<b>Study of effects of space travel on mammalian gravity receptors</b>		
<i>Period</i>	<i>Obligations</i>	
01/17/80-09/30/81	FY81 \$14,451	TOTAL \$38,907
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ross, M	ARC/Ferandin, J A	51-Biological Sci
	ARC/Polson, P	

NAS 2-10945		University of Michigan - Ann Arbor		3017
Study of the effect of weightlessness on the development of amphibian eggs fertilized in space				
Period		Obligations		
04/22/81-10/23/81	FY81	\$19,592	TOTAL	\$19,592
Prn Invest	NASA Tech Officer	CASE Category		
Nace, G W	ARC/Tremor, J W	59-Life Sci, NEC		

NAS 5-11376		University of Michigan - Ann Arbor		3018
Ae-C, D, and E pelz experiment				
Period		Obligations		
01/07/71-11/30/81		FY81 \$19,886	TOTAL	\$1,178,819
Pnn Invest	NASA Tech Officer		CASE Category	
Cangnan, G R	GSFC/Hedin, A E		31-Atmos Sci	
	GSFC/Spencer, N W			



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**NAS 5-11380**      **University of Michigan - Ann Arbor**      **3019**  
 Ae-C, D, and E neutral temperature experiment  
*Period*      *Obligations*  
 02/03/71-09/30/81      FY81 \$40,634      TOTAL \$1,168,050  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      GSFC/Spencer, N W      31-Atmos Sci

**NAS 5-23006**      **University of Michigan - Ann Arbor**      **3020**  
 Atmosphere Explorer visual airglow photometer  
*Period*      *Obligations*  
 08/24/71-09/30/82      FY81 \$184,000      TOTAL \$2,031,664  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hays, P B      GSFC/Bullock, G D      31-Atmos Sci

**NAS 5-24295**      **University of Michigan - Ann Arbor**      **3021**  
 Neutral atmosphere composition experiment for the Dynamic Explorer  
*Period*      *Obligations*  
 07/26/77-08/31/81      FY81 \$63,094      TOTAL \$758,833  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carrignan, G R      GSFC/Fellerman, K D      13-Physics  
    GSFC/Lidstom, J M

**NAS 5-24296**      **University of Michigan - Ann Arbor**      **3022**  
 Fabry-Perot inteferometer for the Dynamic Explorer  
*Period*      *Obligations*  
 07/26/77-09/30/81      FY81 \$138,293      TOTAL \$1,661,869  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hays, P B      GSFC/Fellerman, K D      13-Physics

**NAS 5-24331**      **University of Michigan - Ann Arbor**      **3023**  
 Theoretical investigation to identify and develop specific aeronomic studies and problems adaptable to the AE satellite  
*Period*      *Obligations*  
 12/01/77-09/30/82      FY81 \$105,576      TOTAL \$376,576  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Walker, J C      GSFC/Bullock, G D      31-Atmos Sci

**NAS 5-25002**      **University of Michigan - Ann Arbor**      **3024**  
 Wind and temperature spectrometer for the Dynamics Explorer spacecraft  
*Period*      *Obligations*  
 03/30/78-09/30/83      FY81 \$127,449      TOTAL \$657,352  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      GSFC/Spencer, N W      31-Atmos Sci

**NAS 5-25031**      **University of Michigan - Ann Arbor**      **3025**  
 Develop, fabricate, test, and support hardware for the San Marco/wind and temperature experiment  
*Period*      *Obligations*  
 05/05/78-05/15/82      FY81 \$116,160      TOTAL \$632,160  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      GSFC/Spencer, N W      31-Atmos Sci

**NAS 5-25038**      **University of Michigan - Ann Arbor**      **3026**  
 Theory formulation and analysis support for the Dynamics Explorer spacecraft  
*Period*      *Obligations*  
 08/22/78-07/31/83      FY81 \$57,000      TOTAL \$105,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Nagy, A F      GSFC/Bullock, G      13-Physics

**NAS 5-25145**      **University of Michigan - Ann Arbor**      **3027**  
 Electronic system parts for Galileo probe neutral mass spectrometer  
*Period*      *Obligations*  
 07/31/78-11/01/81      FY81 \$31,639      TOTAL \$198,004  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      GSFC/Way, S      31-Atmos Sci

**NAS 5-25153**      **University of Michigan - Ann Arbor**      **3028**  
 Fabrication of electronic system for the Galileo probe neutral mass spectrometer  
*Period*      *Obligations*  
 08/10/78-05/10/82      FY81 \$407,743      TOTAL \$815,943  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Ponnaperuma, C      GSFC/Niemann, H      31-Atmos Sci  
    GSFC/Way, S

**NAS 5-25158**      **University of Michigan - Ann Arbor**      **3029**  
 CMOS radiation effects measurement (CREM) experiment and associated ground support equipment (GSE)  
*Period*      *Obligations*  
 08/16/78-12/30/83      FY81 \$144,430      TOTAL \$488,426  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      GSFC/Haykin, D      13-Physics  
    GSFC/Chiff, R

**NAS 5-25409**      **University of Michigan - Ann Arbor**      **3030**  
 Protoflight Langmuir probe instrument for Dynamics Explorer  
*Period*      *Obligations*  
 11/27/78-12/31/81      FY81 \$15,021      TOTAL \$86,547  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      GSFC/Krehbiel, J P      13-Physics

**NAS 5-25691**      **University of Michigan - Ann Arbor**      **3031**  
 Data analysis for Fabry-Perot-interferometer for Dynamics Explorer project  
*Period*      *Obligations*  
 02/10/80-07/31/83      FY81 \$112,000      TOTAL \$132,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hays, P      GSFC/Bullock, G      41-Aero Engr

**NAS 5-26069**      **University of Michigan - Ann Arbor**      **3032**  
 NACS experiment for Dynamics Explorer project  
*Period*      *Obligations*  
 02/10/80-07/31/83      FY81 \$49,000      TOTAL \$65,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G      GSFC/Skillman, D      41-Aero Engr

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**NAS 5-26169**      **University of Michigan - Ann Arbor**      **3033**  
 Definition phase of the high resolution Doppler image (HRDI)  
 for the upper atmosphere research satellites program (UARS)  
*Period*      *Obligations*  
 09/24/80-12/31/81      FY81 \$125,167      TOTAL \$354,392  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hays, P B      GSFC/Brown, Jr, W H      31-Atmos Sci

**NAS 5-26189**      **University of Michigan - Ann Arbor**      **3034**  
 Generate an investigation development plan and establish the  
 preliminary interfaces between the orbiter and instrument for the  
 high resolution Doppler imager  
*Period*      *Obligations*  
 06/09/80-01/09/82      FY81 \$268,813      TOTAL \$451,564  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hayes, P B      GSFC/Sing, M L      31-Atmos Sci

**NAS 5-26678**      **University of Michigan - Ann Arbor**      **3035**  
 Conduct design study for Venus orbiting image radar probe  
*Period*      *Obligations*  
 09/04/81-12/03/82      FY81 \$30,000      TOTAL \$30,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Nagy, A F      GSFC/Brace, L H      31-Atmos Sci  
 Corrigan, G

**NAS 6-2794**      **University of Michigan - Ann Arbor**      **3036**  
 Design, fabricate and test five payloads  
*Period*      *Obligations*  
 10/15/76-12/31/81      FY81 \$213,065      TOTAL \$892,020  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Horvath, J J      WFC/Frostrom, R J, Jr      31-Atmos Sci  
 WFC/Perry, T W, Jr

**NAS 8-31987**      **University of Michigan - Ann Arbor**      **3037**  
 Mass spectrometer for induced environment contamination  
 monitor  
*Period*      *Obligations*  
 04/30/76-11/15/81      FY81      TOTAL \$728,651  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      MSFC/Miller, F R      19-Phys Sci, NEC  
 Maurer, J C      MSFC/Wills, F D  
 Eusch, T A

**NAS 8-32332**      **University of Michigan - Ann Arbor**      **3038**  
 Retarding ion mass spectrometer on the high altitude electrody-  
 namic Explorer  
*Period*      *Obligations*  
 01/17/77-12/31/80      FY81      TOTAL \$48,614  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Carignan, G R      MSFC/Chappell, C R      19-Phys Sci, NEC  
 MSFC/Fields, S A

**NAS 8-32569**      **University of Michigan - Ann Arbor**      **3039**  
 Spacelab mission 1, experiment 24 An imaging spectrometric  
 observatory for Spacelab 1  
*Period*      *Obligations*  
 04/15/77-05/31/82      FY81 \$23,575      TOTAL \$3,265,745  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Torr, M R      MSFC/Jones, C T      19-Phys Sci, NEC

**NAS 8-32661**      **University of Michigan - Ann Arbor**      **3040**  
 Spacelab outgassing  
*Period*      *Obligations*  
 09/20/77-10/31/81      FY81 \$33,000      TOTAL \$178,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Shyn, T W      MSFC/Miller, E R      39-Env Sci, NEC  
 Tausch, D      MSFC/Wills, F D  
 Carignan, G R

**NAS 8-34533**      **University of Michigan - Ann Arbor**      **3041**  
 Retarding ion mass spectrometer (RIMS) data analysis  
*Period*      *Obligations*  
 09/02/81-04/01/82      FY81 \$5,943      TOTAL \$5,943  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Nagy, A F      MSFC/Chappell, C R      13-Physics  
 MSFC/Fields, S A

**NAS 9-15244**      **University of Michigan - Ann Arbor**      **3042**  
 Evaluations of postural mechanisms under dynamic conditions  
*Period*      *Obligations*  
 02/01/77-09/01/82      FY81 \$67,000      TOTAL \$226,871  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Anderson, D J      JSC/Homick, J L      56-Medical Sciences

**NAS 9-15375**      **University of Michigan - Ann Arbor**      **3043**  
 Definition of Spacelab I experiment for adaptation of vestibulo-  
 spinal reflex mechanisms during space flight  
*Period*      *Obligations*  
 06/01/77-11/01/81      FY81 \$61,345      TOTAL \$201,345  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Anderson, D J      JSC/Reschke, M F      59-Life Sci, NEC

**NCA 2-440101**      **University of Michigan - Ann Arbor**      **3044**  
 LANDSAT land-use/land-cover map accuracy assessment  
*Period*      *Obligations*  
 05/01/81-09/30/81      FY81 \$16,703      TOTAL \$16,703  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Taketa, R      ARC/Jones, H W      32-Geological Sci

**NCC 3-11**      **University of Michigan - Ann Arbor**      **3045**  
 Interdisciplinary collaboration in tribology  
*Period*      *Obligations*  
 06/05/80-09/30/81      FY81      TOTAL \$32,366  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Ludema, K C      LERC/Wedeven, L D      46-Mech Engr

**NASA'S UNIVERSITY PROGRAM**  
**MICHIGAN (Continued)**

**NGR 23-005-015**      **University of Michigan - Ann Arbor**      **3046**  
Theoretical investigation of space charge waves in ionosphere  
and space plasma sheaths

<i>Period</i>	<i>Obligations</i>
10/28/63-06/30/82	FY81 \$293,000 TOTAL \$1,958,805
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Nagy, A F	HQ-SC/Mayr, H G      31-Atmos Sci
	HQ-SC/Schmerling, E R

**NGR 23-005-320**      **University of Michigan - Ann Arbor**      **3047**  
Theoretical and experimental studies of spacecraft space plasma  
interactions

<i>Period</i>	<i>Obligations</i>
01/29/69-07/31/82	FY81 \$113,000 TOTAL \$647,557
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Samir, U	HQ-SC/Mayr, H G      13-Physics
	HQ-SC/Schmerling, E R

**NGR 23-005-360**      **University of Michigan - Ann Arbor**      **3048**  
A program in aeronomy

<i>Period</i>	<i>Obligations</i>
12/29/69-01/31/82	FY81 \$172,725 TOTAL \$1,956,226
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Sharp, W E	GSFC/Bissell, E E      13-Physics
	HQ-SC/Schmerling, E R

**NGR 23-005-464**      **University of Michigan - Ann Arbor**      **3049**  
Optical studies of galactic X-ray sources

<i>Period</i>	<i>Obligations</i>
03/02/71-02/28/82	FY81 \$19,965 TOTAL \$185,688
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hiltner, W A	HQ-SC/Weiler, E J      11-Astronomy
	HQ-SC/Bogges, N W

**NGR 23-005-528**      **University of Michigan - Ann Arbor**      **3050**  
Fiber-reinforced solids possessing great fracture toughness and  
the role of interfacial strength

<i>Period</i>	<i>Obligations</i>
07/26/72-06/30/81	FY81 TOTAL \$223,394
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Felbeck, D K	LARC/Fichter, W B      47-Materials Engr

**NGT 23-005-800**      **University of Michigan - Ann Arbor**      **3051**  
Methods of geobotanical prospecting graduate student researchers  
program

<i>Period</i>	<i>Obligations</i>
09/01/80-08/31/82	FY81 \$13,000 TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Olson, C E	HQ-LC/Carter, C H      32-Geological Sci

**NSG 1243**      **University of Michigan - Ann Arbor**      **3052**  
Rain scavenging of solid rocket motor exhaust clouds

<i>Period</i>	<i>Obligations</i>
10/01/75-05/31/81	FY81 TOTAL \$257,736
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Dingle, A N	LARC/Pellett, G L      31-Atmos Sci

**NSG 1306**      **University of Michigan - Ann Arbor**      **3053**  
Models and techniques for evaluating the effectiveness of aircraft  
computing systems

<i>Period</i>	<i>Obligations</i>
05/01/76-06/30/82	FY81 \$39,932 TOTAL \$352,107
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Meyer, J F	LARC/Migneault, G E      45-Elec Engr
	LARC/Bavuso, S J

**NSG 1607**      **University of Michigan - Ann Arbor**      **3054**  
Heat generation during cornering and breaking in aircraft tires

<i>Period</i>	<i>Obligations</i>
09/01/79-06/14/82	FY81 \$51,045 TOTAL \$137,075
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Clark, S K	LARC/McCarty, J L      41-Aero Engr
	LARC/Tanner, J A

**NSG 3192**      **University of Michigan - Ann Arbor**      **3055**  
Morphology of Kevlar fibers

<i>Period</i>	<i>Obligations</i>
04/10/78-07/31/81	FY81 TOTAL \$60,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Yeh, G S	LERC/Lauver, R W      47-Materials Engr

**NSG 5189**      **University of Michigan - Ann Arbor**      **3056**  
Direct measurements of photolysis rates of stratospheric  
constituents

<i>Period</i>	<i>Obligations</i>
08/01/77-03/31/82	FY81 \$44,997 TOTAL \$284,023
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Stedman, D H	GSFC/Reed, E I      31-Atmos Sci
Shetter, R E	

**NSG 5281**      **University of Michigan - Ann Arbor**      **3057**  
Interactions of precipitating electrons with the ionosphere using  
characteristic spectral parameters

<i>Period</i>	<i>Obligations</i>
07/01/78-12/31/80	FY81 TOTAL \$47,733
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Fonthem, E G	GSFC/Spencer, N W      31-Atmos Sci
Ong, R S	

**NSG 7209**      **University of Michigan - Ann Arbor**      **3058**  
A program of stratospheric research

<i>Period</i>	<i>Obligations</i>
01/01/76-03/31/81	FY81 TOTAL \$594,030
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cochran, J L	HQ-EB/Watson, R T      31-Atmos Sci

**NSG 7308**      **University of Michigan - Ann Arbor**      **3059**  
The physical and chemical properties of the prebiotic at-  
mosphere

<i>Period</i>	<i>Obligations</i>
02/01/77-01/31/82	FY81 \$27,020 TOTAL \$126,125
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kuhn, W R	HQ-SB/Devincenzi, D L      31-Atmos Sci

## NASA'S UNIVERSITY PROGRAM

### MICHIGAN (Continued)

NSG 7404	University of Michigan - Ann Arbor	3060
A program for research in planetary atmospheres		
<i>Period</i>	<i>Obligations</i>	
10/01/77-01/31/82	FY81 \$86,400	TOTAL \$268,146
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Atreya, S K	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

NSG 7452	University of Michigan - Ann Arbor	3061
Bio-chirality search with variable helicity positrons		
<i>Period</i>	<i>Obligations</i>	
07/01/78-06/30/82	FY81 \$37,450	TOTAL \$136,541
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gidley, D W	HQ-SB/Devincenzi, D L	
Rich, A		51-Biological Sci
Zitzewitz, P W		

NSG 7492		University of Michigan - Ann Arbor	3062
Global-solar-terrestrial electrostatic coupling			
<i>Period</i>		<i>Obligations</i>	
09/01/78-10/31/80	FY81	TOTAL	\$53,200
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Hays, P B	HQ-SC/Schmerling, E R	31-Atmos Sci	

<b>NSG 9047</b>	<b>University of Michigan - Ann Arbor</b>		<b>3063</b>
<b>Mammalian gravity receptors</b>	<b>Structure and metabolism</b>		
<i>Period</i>	<i>Obligations</i>		
<b>11/01/76-10/31/81</b>	<b>FY81</b>	<b>\$52,029</b>	<b>TOTAL \$225,051</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
<b>Ross, M D</b>	<b>HQ-SB/Halstead, T W 51-Biological Sci</b>		

NAG 1-113		Wayne State University		3064	
Analysis of some acoustics-jet flow interaction problems					
<i>Period</i>		<i>Obligations</i>			
11/10/80-11/09/81		FY81	\$10,310	TOTAL	\$10,310
<i>Prn Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Chow, P L		LARC/Maestrello, L		41-Aero Engr	

NAG 2-39	Wayne State University	3065
Development of absorption technique for OH measurements in ambient air		
<i>Period</i>	<i>Obligations</i>	
05/01/80-04/30/82	FY81 \$70,000	TOTAL \$140,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wang, C C	ARC/Munoz, R M	31-Atmos Sci
	ARC/Margozzi, A P	

NAG 3-92		Western Michigan University	3066
Aircraft engine condition monitoring by vibration and sound frequency spectrum analysis			
Period	Obligations		
08/18/80-12/31/81	FY81	TOTAL	\$60,000
Prin Invest	NASA Tech Officer	CASE Category	
Behm, H D	LERC/Schmidt, H W	41-Aero Engr	
Hathaway, R			
Cummings, J W			

## MINNESOTA

NSG 5285	Augsburg College	3067
Analysis of long-term density variations of atomic nitrogen		
<i>Period</i>	<i>Obligations</i>	
07/01/78-12/31/81	FY81 \$20,455	TOTAL \$54,675
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Engelbreton, M J	GSFC/Spencer, N W	31-Atmos Sc

<b>NAS 5-26221</b>		<b>Concordia College in Moorhead</b>	<b>3068</b>
<b>Study of the effects of cosmic dust particle impacts on mass spectrometers</b>			
<i>Period</i>		<i>Obligations</i>	
05/19/80-11/01/80	FY81	TOTAL	\$17,511
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Bailey, C L	GSFC/Donn, B	13-Physics	
	GSFC/Niemann, H		

NAG 3-165		University of Minnesota-Duluth	3069
Water quality measurements through use of Nimbus 7 coastal zone color scanner data			
<i>Period</i>		<i>Obligations</i>	
03/15/81-12/05/82	FY81	\$223,808	TOTAL \$223,808
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Sydr, M	LERC/Shook, D		13-Physics

NAG 1-99		Univ of Minnesota - Minneapolis-St Paul	3070
Increasing the damping in composite truss members			
<i>Period</i>		<i>Obligations</i>	
09/01/80-06/15/82	FY81	TOTAL	\$40,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Plunkett, R	LARC/Card, M F	47-Materials Engr	

NAG 2-4		Univ of Minnesota - Minneapolis-St Paul		3071
A subsurface panel method				
<i>Period</i>		<i>Obligations</i>		
11/01/79-06/15/82		FY81 \$40,437	TOTAL \$79,412	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Moran, J P	ARC/Chapman, G T		41-Aero Engr	

NAG 2-31		Univ of Minnesota - Minneapolis-St Paul	3072
Condensation nuclei measurements in the stratosphere for the NASA Space program			
<i>Period</i>		<i>Obligations</i>	
02/01/80-12/31/81	FY81	\$51,000	TOTAL \$128,000
<i>Prm Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Liu, B Y	ARC/Page, W A		31-Atmos Sci
Wilson, J C			

NAG 2-63		Univ of Minnesota - Minneapolis-St Paul	3073
Drop dynamics and breakup			
<i>Period</i>		<i>Obligations</i>	
08/01/80-09/30/81	FY81	TOTAL	\$43,075
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Scriven, L E	ARC/Brooks, W F	13-Physics	

**NASA'S UNIVERSITY PROGRAM**  
**MINNESOTA (Continued)**

**NAG 3-161** Univ of Minnesota - Minneapolis-St Paul 3074  
 Studies of acoustical properties of bulk porous flexible fibrous materials

Period	Obligations
02/20/81-02/19/84	FY81 \$84,345 TOTAL \$84,345
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lambert, R F	LERC/Rice, E J 13-Physics
	LERC/Baumeister, K J

**NAG 5-190** Univ of Minnesota - Minneapolis-St Paul 3075  
 Study of variable extinction of hot stars with circumstellar dust shells

Period	Obligations
07/01/81-06/30/82	FY81 \$6,018 TOTAL \$6,018
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Sitko, M L	GSFC/Bogges, A 11-Astronomy

**NAG 5-191** Univ of Minnesota - Minneapolis-St Paul 3076  
 Ultraviolet spectroscopy of supergiants

Period	Obligations
07/01/81-02/28/82	FY81 \$6,000 TOTAL \$6,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Humphreys, R M	GSFC/Bogges, A 11-Astronomy

**NAG 6-11** Univ of Minnesota - Minneapolis-St Paul 3077  
 Investigation of auroral electrodynamics and argon release for controlled studies (ARCS)

Period	Obligations
04/23/81-04/22/82	FY81 \$87,205 TOTAL \$87,205
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cahill, L J	WFC/Early, L J 19-Phys Sci, NEC
Kintner, P M	WFC/Pless, P H

**NAS 5-11310** Univ of Minnesota - Minneapolis-St Paul 3078  
 A C Electric fields experiment Helios

Period	Obligations
06/29/70-02/28/82	FY81 TOTAL \$1,568,222
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kellogg, P J	GSFC/Corrigan, J P 11-Astronomy

**NAS 5-11438** Univ of Minnesota - Minneapolis-St Paul 3079  
 Open source neutral mass spectrometers for AE spacecraft, missions C, D, and E

Period	Obligations
06/15/71-09/30/81	FY81 TOTAL \$1,340,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Nier, A O	GSFC/Rice, C 31-Atmos Sci

**NAS 5-25389** Univ of Minnesota - Minneapolis-St Paul 3080  
 Dynamic Explorer A and B magnetometer experiment support

Period	Obligations
11/08/78-07/31/82	FY81 \$41,000 TOTAL \$49,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cahill, L J, Jr	GSFC/Sugiura, M 13-Physics

**NAS 5-25753** Univ of Minnesota - Minneapolis-St Paul 3081  
 Selected hardware for unified radio and plasma wave experiment for International Solar Polar Mission

Period	Obligations
07/03/79-09/30/85	FY81 \$247,900 TOTAL \$642,486
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kellogg, P J	GSFC/Klein, B 11-Astronomy

**NAS 5-26056** Univ of Minnesota - Minneapolis-St Paul 3082  
 Generate an investigation development plan and establish the preliminary interfaces between the space transportation system/ Spacelab and instrument per high energy interactions of cosmic rays

Period	Obligations
02/14/80-03/31/83	FY81 \$194,227 TOTAL \$328,409
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Waddington, C J	GSFC/Sing, M 11-Astronomy

**NAS 8-27977** Univ of Minnesota - Minneapolis-St Paul 3083  
 Design, development, and operation of Cerenkov portion of the ACR-7 heavy nuclei experiment under the HEAO program

Period	Obligations
06/16/72-09/30/82	FY81 \$110,400 TOTAL \$1,598,689
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Waddington, C J	MSFC/Stone, J F 11-Astronomy

**NAS 9-16427** Univ of Minnesota - Minneapolis-St Paul 3084  
 Sunflower stress identification study

Period	Obligations
08/24/81-06/30/82	FY81 \$30,000 TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Lillesand, T M	JSC/Whitehead, V 39-Env Sci, NEC

**NGL 24-005-009** Univ of Minnesota - Minneapolis-St Paul 3085  
 Development and application of mass spectrometers to studies of Earth's upper atmosphere and planetary atmospheres

Period	Obligations
08/01/62-08/31/82	FY81 \$120,000 TOTAL \$1,973,682
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Nier, A O	HQ-SL/Murphy, R E 31-Atmos Sci
	HQ-SL/Brunk, W E

**NGL 24-005-225** Univ of Minnesota - Minneapolis-St Paul 3086  
 Lunar sample analysis

Period	Obligations
01/26/71-02/28/82	FY81 \$134,100 TOTAL \$1,100,349
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Pepin, R O	JSC/Warner, J L 13-Physics

**NGL 24-005-263** Univ of Minnesota - Minneapolis-St Paul 3087  
 Study of Minnesota forests and lakes using data from Earth resources technology satellites

Period	Obligations
07/06/72-06/30/82	FY81 \$40,000 TOTAL \$635,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hobbie, R K	HQ-ET/Vitale, J A 39-Env Sci, NEC

# NASA'S UNIVERSITY PROGRAM MINNESOTA (Continued)

**NGR 24-005-050** Univ of Minnesota - Minneapolis-St Paul 3088  
Measurement of the gamma ray flux of various celestial point sources from high altitude balloons

Period	Obligations
04/21/65-11/30/81	FY81 \$101,000 TOTAL \$1,145,508
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Waddington, C J	HQ-SC/Kaluzienski, L J 11-Astronomy
	HQ-SC/Holt, S S

**NSG 1431** Univ of Minnesota - Minneapolis-St Paul 3089  
Neutral constituent measurements in the stratosphere

Period	Obligations
07/01/77-09/30/81	FY81 \$102,121 TOTAL \$405,834
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Mauersberger, K	LARC/Beswick, A G 31-Atmos Sci

**NSG 2014** Univ of Minnesota - Minneapolis-St Paul 3090  
Exploratory astrophysics and infrared astronomy

Period	Obligations
02/01/74-03/31/82	FY81 \$57,929 TOTAL \$494,929
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Ney, E	HQ-SC/Bogges, N W 11-Astronomy
	HQ-SC/Weiler, E J

**NSG 5088** Univ of Minnesota - Minneapolis-St Paul 3091  
Magnetospheric physics phenomena using sounding rockets

Period	Obligations
11/01/75-12/31/82	FY81 \$175,000 TOTAL \$994,593
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Winckler, J R	GSFC/Guidotti, J G 13-Physics
	HQ-SC/Schmerling, E R

**NSG 5373** Univ of Minnesota - Minneapolis-St Paul 3092  
Experiments employing a rocket-borne electron accelerator

Period	Obligations
06/15/79-12/31/81	FY81 \$25,220 TOTAL \$128,020
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Kellogg, P J	GSFC/Guidotti, J G 13-Physics
Bernstein, W	HQ-SC/Schmerling, E R

**NSG 5397** Univ of Minnesota - Minneapolis-St Paul 3093  
Observations of emission lines in the Crab nebula

Period	Obligations
08/01/79-04/30/82	FY81 \$5,500 TOTAL \$16,820
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Davidson, K.	GSFC/Bogges, A 11-Astronomy
Gull, T R	
MacAlpine, G M	

**NSG 6021** Univ of Minnesota - Minneapolis-St Paul 3094  
Rocket study of auroral processes

Period	Obligations
06/01/78-12/31/81	FY81 \$55,393 TOTAL \$233,075
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cahill, L J	WFC/Early, L J 19-Phys Sci, NEC

**NSG 7005** Univ of Minnesota - Minneapolis-St Paul 3095  
Energetic particles in the magnetosphere and space

Period	Obligations
07/01/73-09/30/80	FY81 TOTAL \$837,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Winckler, J R	HQ-SC/King, J H 39-Env Sci, NEC
	HQ-SC/Schmerling, E R

**NSG 7221** Univ of Minnesota - Minneapolis-St Paul 3096  
Neutral constituent measurements in the stratosphere

Period	Obligations
03/16/76-02/29/80	FY81 TOTAL \$88,243
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Mauersberger, K	HQ-EB/Toth, R A 31-Atmos Sci

**NSG 7237** Univ of Minnesota - Minneapolis-St Paul 3097  
Interpretation of data obtained with the Explorer 45 spacecraft  
Major objective is understanding of magnetic storms

Period	Obligations
06/01/76-03/31/80	FY81 TOTAL \$72,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Cahill, L J, Jr	HQ-SC/Cauffman, D P 19-Phys Sci, NEC
	HQ-SC/Schmerling, E R

**NSG 9050** Univ of Minnesota - Minneapolis-St Paul 3098  
Petrologic study of returned lunar samples

Period	Obligations
02/01/77-12/31/81	FY81 \$30,763 TOTAL \$82,063
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Weiblen, P W	JSC/Warner, J L 32-Geological Sci

## MISSISSIPPI

**NGR 25-012-001** Alcorn State University 3099  
Radio tracking of geostationary satellites

Period	Obligations
09/01/73-12/31/81	FY81 TOTAL \$243,275
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Paul, M P	GSFC/Grebowsky, J 31-Atmos Sci

**NSG 8036** Alcorn State University 3100  
Bio-gas production from alligator weeds

Period	Obligations
06/01/76-11/31/81	FY81 \$26,500 TOTAL \$114,713
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Latif, A	NSTL/Wolverton, B C 51-Biological Sci

**NAG 5-158** Jackson State University 3101  
Electronic and molecular structure of gaseous ions in interstellar space

Period	Obligations
05/01/81-04/30/82	FY81 \$67,000 TOTAL \$67,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Perkins, J	GSFC/Miller, G E 31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM**  
**MISSISSIPPI (Continued)**

**NSG 736**                      **Jackson State University**                      **3102**  
 LANDSAT study of urban land use, Jackson, MS  
*Period*    *Obligations*  
 08/13/79-01/12/82                      FY81 \$77,925                      TOTAL \$171,609  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Lang, M    NSTL/Atwell, B H                      32-Geological Sci  
 Choi, Y

**NSG 8026**                      **Jackson State University**                      **3103**  
 Aquatic plants as filtration systems for chlorinated hydrocarbons  
*Period*    *Obligations*  
 06/01/75-08/31/81                      FY81 \$15,000                      TOTAL \$230,689  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Shores, F    NSTL/Wolverton, B C                      39-Env Sci, NEC

**NAG 1-3**                      **Mississippi State University**                      **3104**  
 Investigation of flight test methods for the performance of general aviation aircraft  
*Period*    *Obligations*  
 11/01/79-01/31/82                      FY81 \$37,780                      TOTAL \$113,480  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Bull, G    LARC/Holmes, B J                      41-Aero Engr  
 Bridges, P D    LARC/Brown, P W

**NAG 3-56**                      **Mississippi State University**                      **3105**  
 Propeller propulsion intergration  
*Period*    *Obligations*  
 04/01/80-06/09/81                      FY81                      TOTAL \$58,250  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Bennett, A G    LERC/Mitchell, G A                      41-Aero Engr

**NAS 8-32912**                      **Mississippi State University**                      **3106**  
 Develop a computer program to compute the flow field, aerodynamic forces and heating rate on arbitrary shaped bodies  
*Period*    *Obligations*  
 05/25/78-09/30/80                      FY81                      TOTAL \$68,787  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Kassner, J L , Jr    MSFC/Sims, J L                      49-Engr, NEC  
    MSFC/Donahoo, L K

**NAS 8-33448**                      **Mississippi State University**                      **3107**  
 High density circuits technology  
*Period*    *Obligations*  
 07/13/79-12/12/81                      FY81 \$28,321                      TOTAL \$64,131  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Wade, T E    MSFC/Dehaye, R F                      45-Elec Engr  
    MSFC/Gould, J

**NAS 8-33450**                      **Mississippi State University**                      **3108**  
 Electron lithography star design guidelines  
*Period*    *Obligations*  
 08/02/79-02/14/82                      FY81                      TOTAL \$79,069  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Causey, W H    MSFC/Edge, T M                      45-Elec Engr

**NAS 8-33570**                      **Mississippi State University**                      **3109**  
 Research study Analysis of space telescope collection systems  
*Period*    *Obligations*  
 07/26/79-01/31/82                      FY81 \$31,363                      TOTAL \$61,363  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Ingels, F M    MSFC/Thomas, J H                      11-Astronomy  
    MSFC/Coffey, R D

**NAS 8-33887**                      **Mississippi State University**                      **3110**  
 Research study A study of high density bit transition requirements versus the effects on BCH error coding  
*Period*    *Obligations*  
 07/01/80-12/31/81                      FY81                      TOTAL \$39,707  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Ingels, F M    MSFC/Sieler, B K                      45-Elec Engr  
    MSFC/Coffey, R D

**NAS 9-16273**                      **Mississippi State University**                      **3111**  
 Study of uncertainty analysis of projections of increased skin cancer incidence resulting from ozone reduction/increased UV-B  
*Period*    *Obligations*  
 04/01/81-12/31/81                      FY81 \$9,991                      TOTAL \$9,991  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Rundel, R    JSC/Nachtwey, D S                      13-Physics

**NAS13-158**                      **Mississippi State University**                      **3112**  
 To provide remote sensing workshops for state government personnel  
*Period*    *Obligations*  
 07/29/80-07/28/81                      FY81                      TOTAL \$12,000  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Miller, W F    NSTL/Atwell, B H                      32-Geological Sci

**NGL 25-001-054**                      **Mississippi State University**                      **3113**  
 Application of remotely sensed data to state and regional problems  
*Period*    *Obligations*  
 11/01/73-10/30/84                      FY81 \$150,000                      TOTAL \$1,050,000  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Miller, W F    HQ-ET/Vitale, J A                      39-Env Sci, NEC

**NGR 25-001-055**                      **Mississippi State University**                      **3114**  
 Numerical solution of the Navier-Stokes equations for arbitrary two-dimensional multi-element airfoils  
*Period*    *Obligations*  
 01/01/74-02/28/82                      FY81 \$41,881                      TOTAL \$263,210  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Thompson, J F    LARC/Thames, F C                      41-Aero Engr

**NSG 1249**                      **Mississippi State University**                      **3115**  
 Flight test of a wing stall sensor and evaluation of its application to an aircraft stall deterrent system  
*Period*    *Obligations*  
 09/15/75-02/29/80                      FY81                      TOTAL \$199,165  
*Prin Invest*    *NASA Tech Officer*    *CASE Category*  
 Bennett, A G , Jr    LARC/Stewart, E C                      41-Aero Engr  
 Owens, J K

**NASA'S UNIVERSITY PROGRAM**  
**MISSISSIPPI (Continued)**

**NSG 1577**                      **Mississippi State University**                      **3116**  
Transformation of two and three dimensional regions by elliptic systems

<i>Period</i>	<i>Obligations</i>	
11/15/78-11/14/81	FY81 \$27,455	TOTAL \$70,595
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Thompson, J F	LARC/Smith, R E, Jr	21-Mathematics
Mastin, C W	LARC/Shoosmith, J N	

**NSG 1623**                      **Mississippi State University**                      **3117**  
Theoretical investigation of high-lift aerodynamics

<i>Period</i>	<i>Obligations</i>	
08/20/79-12/31/81	FY81 \$66,584	TOTAL \$118,684
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bennett, A G	LARC/Thomas, J L	41-Aero Engr
Thompson, J F	LARC/Morgan, H L	

**NSG 1539**                      **Mississippi University For Women**                      **3118**  
Monomers for thermosetting and toughening epoxy resins

<i>Period</i>	<i>Obligations</i>	
06/15/78-10/31/81	FY81 \$42,224	TOTAL \$91,027
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Pratt, J R	LARC/St Clair, T L	12-Chemistry

**NAG 1-49**                      **University of Southern Mississippi**                      **3119**  
A photoionization mass spectrometer study of carbon vapor

<i>Period</i>	<i>Obligations</i>	
03/01/80-09/30/82	FY81	TOTAL \$26,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rayborn, G H	LARC/Jones, J J	13-Physics

**NAS 1-16503**                      **University of Southern Mississippi**                      **3120**  
Study of the intensity and energy distribution of electrons in a low energy magnetometer

<i>Period</i>	<i>Obligations</i>	
11/12/80-08/11/81	FY81 \$2,350	TOTAL \$2,350
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rayborn, G R	LARC/Wood, G M	13-Physics

**NAS13-95**                      **University of Southern Mississippi**                      **3121**  
Demonstration and evaluation of EMS telemetry capability in remote areas using synchronous satellite communications technology

<i>Period</i>	<i>Obligations</i>	
07/17/78-05/31/81	FY81	TOTAL \$274,236
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brundage, W G	NSTL/Whitley, S L	49-Engr, NEC

**MISSOURI**

**NAG13-1**                      **Lincoln University - Mo**                      **3122**  
LANDSAT study relating soil zinc content to diabetes

<i>Period</i>	<i>Obligations</i>	
01/02/80-07/01/81	FY81	TOTAL \$54,844
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Molnar, I G	NSTL/Atwell, B H	59-Life Sci, NEC

**NAS 8-33370**                      **Saint Louis University**                      **3123**  
Kinetic energy budgets in areas of intense convections

<i>Period</i>	<i>Obligations</i>	
04/01/79-04/30/82	FY81 \$52,894	TOTAL \$114,520
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fuelburg, H E	MSFC/Hill, K	31-Atmos Sci
	MSFC/Turner, R E	

**NAS 9-16231**                      **Saint Louis University**                      **3124**  
Cutaneous fluid and electrolyte losses in weightlessness

<i>Period</i>	<i>Obligations</i>	
09/30/80-01/31/82	FY81 \$37,664	TOTAL \$37,664
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Vanbeaumont, W	JSC/Lintott, J	59-Life Sci, NEC

**NAGW 46**                      **University of Missouri - Columbia**                      **3125**  
Development of remote sensing experience at the University of Missouri-Columbia

<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/84	FY81 \$115,000	TOTAL \$285,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johannsen, C J	HQ-ET/Vitale, J A	39-Env Sci, NEC

**NAGW 170**                      **University of Missouri - Columbia**                      **3126**  
Galilean satellite mapping programs

<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$10,000	TOTAL \$10,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stark, J W	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

**NAS 8-31150**                      **University of Missouri - Columbia**                      **3127**  
Research study of microphysical processes in atmospheric clouds

<i>Period</i>	<i>Obligations</i>	
02/11/75-06/30/81	FY81	TOTAL \$116,488
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tung, C	MSFC/Smith, R E	31-Atmos Sci
Hale, B N	MSFC/Anderson, B J	

**NAS 8-31849**                      **University of Missouri - Columbia**                      **3128**  
Cloud physics laboratory science simulator

<i>Period</i>	<i>Obligations</i>	
04/29/76-11/14/81	FY81	TOTAL \$319,958
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kassner, J L, Jr	MSFC/Smith, R C	31-Atmos Sci
	MSFC/Anderson, B J	



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**MISSOURI (Continued)**

**NAS 9-15477**      **University of Missouri - Columbia**      **3129**  
 Development and verification of simulation models for analyzing  
 orbiter digital communications and data links  
*Period*      *Obligations*  
 01/01/78-01/01/82      FY81      TOTAL \$55,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Tranter, W H      JSC/Eggleston, T W      45-Elec Engr

**NAS 9-15896**      **University of Missouri - Columbia**      **3130**  
 Earth resources synthetic aperture radar applications development  
 working group  
*Period*      *Obligations*  
 09/17/79-12/31/81      FY81      TOTAL \$161,799  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Rouse, J W      JSC/Harnage, M J      39-Env Sci, NEC

**NAS13-140**      **University of Missouri - Columbia**      **3131**  
 Incorporation of LANDSAT technology into Farmers' Informa-  
 tion System being developed by NASA and the Missouri Farmers'  
 Association  
*Period*      *Obligations*  
 02/01/80-12/31/80      FY81      TOTAL \$40,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Johannsen, C J      NSTL/Joyce, A T      32-Geological Sci

**NAS13-174**      **University of Missouri - Columbia**      **3132**  
 Incorporation of LANDSAT technology into Farmers' Informa-  
 tion System being developed by NASA and the Missouri Farmers'  
 Association  
*Period*      *Obligations*  
 03/18/81-12/31/81      FY81 \$40,000      TOTAL \$40,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Pirog, R      NSTL/Joyce, A T      32-Geological Sci

**NSG 5338**      **University of Missouri - Columbia**      **3133**  
 Research of optimum radiometer parameters for soil moisture  
 monitoring  
*Period*      *Obligations*  
 04/01/79-07/31/81      FY81      TOTAL \$25,164  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Rouse, J W , Jr      GSFC/Schmugge, T J      39-Env Sci, NEC

**NAG 1-26**      **University of Missouri - Rolla**      **3134**  
 Aerodynamic-structural study of canard wing, dual wing, and  
 conventional wing system for general aviation applications  
*Period*      *Obligations*  
 01/01/80-03/31/82      FY81 \$75,392      TOTAL \$144,813  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Selberg, B P      LARC/Holmes, B J      41-Aero Engr  
 Cronin, D L

**NAG 1-198**      **University of Missouri - Rolla**      **3135**  
 Near and far field radiation for ducts using a finite and infinite  
 element approach  
*Period*      *Obligations*  
 08/15/81-08/14/82      FY81 \$20,766      TOTAL \$20,766  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Eversman, W      LARC/Lester, H C      41-Aero Engr  
 Astley, R J      LARC/Silcox, R J

**NAG 3-178**      **University of Missouri - Rolla**      **3136**  
 Study of sound transmission in high speed flows  
*Period*      *Obligations*  
 08/31/81-08/30/82      FY81 \$36,829      TOTAL \$36,829  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Eversman, W      LERC/Baumeister, K J      41-Aero Engr  
 LERC/Rice, E J

**NAS 8-32976**      **University of Missouri - Rolla**      **3137**  
 Monodisperse cloud experiment  
*Period*      *Obligations*  
 04/03/78-11/30/81      FY81 \$115,661      TOTAL \$195,661  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hagen, D E      MSFC/Smith, R E      31-Atmos Sci  
 Kassner, J L , Jr      MSFC/Anders, B J

**NAS13-150**      **University of Missouri - Rolla**      **3138**  
 Conduct short courses in remote sensing, as an aid in mine  
 engineering, reclamation and quality control  
*Period*      *Obligations*  
 05/15/80-05/15/82      FY81      TOTAL \$14,930  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Elhfrts, C D      NSTL/Atwell, B H      32-Geological Sci

**NCA 2-450001**      **University of Missouri - Rolla**      **3139**  
 The effect of turbulent boundary layer on transonic flows  
*Period*      *Obligations*  
 12/01/79-11/30/81      FY81 \$22,000      TOTAL \$42,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Lee, S C      ARC/Holst, T L      41-Aero Engr  
 ARC/Vandalsem, W R

**NSG 1369**      **University of Missouri - Rolla**      **3140**  
 Transport properties in the atmosphere of Jupiter  
*Period*      *Obligations*  
 01/01/77-12/31/81      FY81      TOTAL \$54,404  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Biolsi, L      LARC/Jones, J J      12-Chemistry

**NSG 1452**      **University of Missouri - Rolla**      **3141**  
 Study of gas-solid airflow over a flat plate  
*Period*      *Obligations*  
 10/01/77-11/30/81      FY81      TOTAL \$197,052  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Patterson, G K      LARC/Hefner, J N      41-Aero Engr  
 Oetting, R B      LARC/Bushnell, D M  
 Anderson, R A

**NASA'S UNIVERSITY PROGRAM**  
**MISSOURI (Continued)**

**NSG 3231**                      **University of Missouri - Rolla**                      **3142**  
Transmission of sound in high speed flows  
*Period*                                      *Obligations*  
01/01/79-08/31/81                      FY81                      TOTAL \$57,294  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Eversman, W                      LERC/Baumeister, K J                      41-Aero Engr  
LERC/Rice, E J

**NSG 5400**                      **University of Missouri - Saint Louis**                      **3143**  
Research of mass loss in the ultraviolet spectrum  
*Period*                                      *Obligations*  
07/09/79-03/31/81                      FY81                      TOTAL \$11,700  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lamb, S A                      GSFC/Bogges, A                      11-Astronomy  
Sargent, W L

**NSG 7563**                      **University of Missouri - Saint Louis**                      **3144**  
Condensate phenomena in the polar regions of Mars  
*Period*                                      *Obligations*  
03/01/79-02/28/82                      FY81 \$26,668                      TOTAL \$55,978  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
James, P B                      HQ-SL/Quaide, W L                      32-Geological Sci  
HQ-SL/Boyce, J M

**NAG 1-38**                      **Washington University**                      **3145**  
Measurement of the diurnal variation of the radicals in the upper atmosphere  
*Period*                                      *Obligations*  
03/06/80-02/28/82                      FY81                      TOTAL \$50,050  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Smith, W H                      LARC/Boughner, R E                      31-Atmos Sci  
LARC/Callis, L B , Jr

**NAG 5-108**                      **Washington University**                      **3146**  
Search for interstellar water absorption  
*Period*                                      *Obligations*  
10/01/80-09/30/81                      FY81                      TOTAL \$6,112  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Smith, W H                      GSFC/Corrigan, J P                      11-Astronomy

**NAG 9-7**                      **Washington University**                      **3147**  
Lunar and planetary surface dynamics and early history  
*Period*                                      *Obligations*  
02/01/80-01/31/82                      FY81 \$105,000                      TOTAL \$201,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hohenberg, C M                      JSC/Warner, J L                      31-Atmos Sci

**NAGW 122**                      **Washington University**                      **3148**  
Proposal for the innovative research program  
*Period*                                      *Obligations*  
11/15/80-11/14/82                      FY81 \$250,000                      TOTAL \$250,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Walker, R M                      HQ-SP/Taylor, T C                      11-Astronomy  
HQ-SP/Heninger, L W

**NAGW 179**                      **Washington University**                      **3149**  
Analytical, experimental, and modeling studies of lunar and terrestrial igneous rocks  
*Period*                                      *Obligations*  
04/01/81-03/31/82                      FY81 \$110,042                      TOTAL \$110,042  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Haskin, L A                      HQ-SL/Quaide, W L                      32-Geological Sci  
HQ-SL/French, B M

**NAS 2-10636**                      **Washington University**                      **3150**  
The effect of spaceflight on the growth, mineralization and remodeling of the rhesus monkey skeleton  
*Period*                                      *Obligations*  
05/15/80-07/31/83                      FY81 \$21,000                      TOTAL \$32,645  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Simmons, D J                      ARC/Souza, K A                      59-Life Sci, NEC  
ARC/Holton, E A

**NAS 5-26533**                      **Washington University**                      **3151**  
Structure of the St Francois Mountains and surrounding lead belt St Francois Mountains and surrounding lead belt, SE Missouri  
*Period*                                      *Obligations*  
05/12/81-09/11/82                      FY81 \$25,623                      TOTAL \$25,623  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Arvidson, R E                      GSFC/Broderick, J C                      32-Geological Sci  
Davies, G F

**NAS 8-27976**                      **Washington University**                      **3152**  
Design, development and operation of a heavy nuclei experiment under the HEAO program  
*Period*                                      *Obligations*  
06/16/72-09/30/82                      FY81 \$171,748                      TOTAL \$906,879  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Israel, M H                      MSFC/Stone, J F                      11-Astronomy

**NAS 8-34341**                      **Washington University**                      **3153**  
Fire fighting module evaluation  
*Period*                                      *Obligations*  
07/15/81-06/14/83                      FY81 \$18,000                      TOTAL \$18,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Haefner, L E                      MSFC/Burns, R                      46-Mech Engr  
MSFC/Kent, M I

**NASW 3331**                      **Washington University**                      **3154**  
Stimulating operational private sector use of Earth observation satellite information  
*Period*                                      *Obligations*  
11/01/79-01/15/81                      FY81                      TOTAL \$100,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Eastwood, L F                      HQ-ET/Weinstein, R H                      39-Env Sci, NEC  
HQ-ET/Tuyahov, A J

### NASA'S UNIVERSITY PROGRAM

#### MISSOURI (Continued)

NCA 2-841001		Washington University	3155
Investigations of Titan's atmosphere			
<i>Period</i>		<i>Obligations</i>	
07/01/80-06/30/82	FY81	TOTAL	\$7,104
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Smith, W H	ARC/Cuzzi, J N	31-Atmos Sci	
	ARC/Giver, L P		

<b>NGL 26-008-065</b>	<b>Washington University</b>	<b>3156</b>
Lunar sample analysis		
<i>Period</i>	<i>Obligations</i>	
02/01/71-01/31/82	FY81 \$385,127	TOTAL \$3,172,642
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Walker, R M	JSC/Warner, J L	13-Physics

NGR 26-008-001	Washington University	3157
Determination of characteristics of high altitude primary cosmic radiation at low latitudes		
Period	Obligations	
09/01/61-10/31/81	FY81 \$170,000	TOTAL \$2,005,540
Prin Invest	NASA Tech Officer	CASE Category
Klarmann, J	HQ-SC/Gilman, D A	11-Astronomy
Israel, M H	HO-SC/Holt, S S	

<b>NSG 1601</b>	<b>Washington University</b>	<b>3158</b>
<b>Quantitative non-destructive evaluation of damage in graphite-epoxy composites using transmitted and reflected ultrasound</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/15/79-03/14/82</b>	<b>FY81 \$69,058</b>	<b>TOTAL \$168,826</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Miller, J G</b>	<b>LARC/Heyman, J S</b>	<b>13-Physics</b>
	<b>LARC/Winfree, W P</b>	

<b>NSG 7016</b>	<b>Washington University</b>	<b>3159</b>
<b>Lunar data analysis and synthesis program on lunar surface dynamics</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/01/73-12/31/80</b>	<b>FY81</b>	<b>TOTAL \$496,156</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Hohenberg, C M</b>	<b>HO-SL/Quaide, W L</b>	<b>32-Geological Sci</b>

<b>NSG 7087</b>	<b>Washington University</b>	<b>3160</b>
<b>Computerized analysis of Martian crater and aeolian feature data</b>		
<i>Period</i>	<i>Obligations</i>	
08/01/74-12/31/81	FY81 \$102,445	TOTAL \$449,180
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arvidson, R E	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Quaide, W L	

<b>NSG 7334</b>	<b>Washington University</b>	<b>3161</b>
<b>Planetary observations using a new Fabry-Perot interferometric method</b>		
<i>Period</i>	<i>Obligations</i>	
04/01/77-03/31/82	FY81 \$100,840	TOTAL \$428,221
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, W H	HQ-SL/Brunk, W E	11-Astronomy
	HQ-SL/Murphy, R E	

<b>NSG 7372</b>	<b>Washington University</b>	<b>3162</b>
<b>Interferometric spectral observations of the interstellar medium in the near ultraviolet</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/77-03/31/83</b>	<b>FY81</b>	<b>TOTAL \$122,110</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Smith, W H</b>	<b>HQ-SC/Weiler, E J</b>	<b>11-Astronomy</b>
	<b>HQ-SC/Bogges, N W</b>	

<b>NSG 7545</b>	<b>Washington University</b>	<b>3163</b>
<b>Multispectral, topographic, and photogeologic studies of aeolian phenomena on Mars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/79-11/01/81</b>	<b>FY81 \$66,354</b>	<b>TOTAL \$193,653</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Arvidson, R E</b>	<b>HQ-SL/Boyce, J M</b>	<b>32-Geological Sci</b>
	<b>HQ-SL/Quaide, W L</b>	

<b>NSG 7578</b>	<b>Washington University</b>	<b>3164</b>
<b>Evolution of Mars</b>		
<i>Period</i>	<i>Obligations</i>	
03/01/79-02/28/82	FY81 \$118,800	TOTAL \$221,194
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Goettal, K A	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/Boyce, J M	

<b>NSG 9055</b>	<b>Washington University</b>	<b>3165</b>
Chemical studies of materials and processes in the lunar regolith and of lunar and terrestrial igneous differentiation		
<i>Period</i>	<i>Obligations</i>	
02/01/77-01/31/82	FY81 \$70,798	TOTAL \$578,598
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Haskin, L A	JSC/Warner, J L	32-Geological Sci

## MONTANA

NAG 2-37		Montana State University		3166	
A study of supersonic three-dimensional turbulent boundary layer					
Period		Obligations			
05/01/80-04/30/82		FY81	\$52,125	TOTAL	\$88,077
Prin	Invest	NASA Tech Officer		CASE Category	
Demetriades, A		ARC/Horstman, C C		41-Aero Engr	
Reithman, T C		ARC/Marvin, J G			

<b>NAS 9-16007</b>	<b>Montana State University</b>	<b>3167</b>
Study to improve parameters for a winter wheat model		
<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/81	FY81 \$100,000	TOTAL \$177,800
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Caprio, J M	JSC/Ravet, F W	39-Env Sci, NEC

# NASA'S UNIVERSITY PROGRAM NEBRASKA

## NEBRASKA

**NAS 9-16162**      **Kearney State College**      **3168**  
In-cloud predictions for Space Shuttle launches  
*Period*      *Obligations*  
08/25/80-12/31/81      FY81      TOTAL \$31,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Glasser, M E      JSC/Patterson, A E      31-Atmos Sci

**NAG 3-95**      **University of Nebraska - Lincoln**      **3169**  
Intercalated carbon fiber conductor for aerospace use  
*Period*      *Obligations*  
09/01/80-01/28/83      FY81 \$40,000      TOTAL \$64,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Woollam, J A      LERC/Riley, T J      45-Elec Engr  
LERC/Myers, I T

**NAG 3-120**      **University of Nebraska - Lincoln**      **3170**  
Diffusion length measurements in gallium arsenide and other III IV semiconductor compounds  
*Period*      *Obligations*  
10/30/80-04/29/82      FY81 \$16,956      TOTAL \$16,956  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Woollam, J A      LERC/Flood, D J      13-Physics

**NAG 3-154**      **University of Nebraska - Lincoln**      **3171**  
Surface passivation of III IV compound semiconductors for microwave applications  
*Period*      *Obligations*  
03/10/81-03/09/82      FY81 \$51,920      TOTAL \$51,920  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Woollam, J A      LERC/Liu, D C      19-Phys Sci, NEC

**NAS 3-22465**      **University of Nebraska - Lincoln**      **3172**  
III-V compound semiconductors for microwave application  
*Period*      *Obligations*  
12/09/80-09/21/81      FY81 \$11,723      TOTAL \$11,723  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Woollam, J A      LERC/Haugland, E J      45-Elec Engr  
LERC/Connolly, D J

**NGL 28-004-020**      **University of Nebraska - Lincoln**      **3173**  
Applications of remote sensing in resource management in Nebraska  
*Period*      *Obligations*  
04/20/72-04/30/84      FY81 \$150,000      TOTAL \$1,025,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Carlson, M P      HQ-ET/Vitale, J A      39-Env Sci, NEC

**NGR 28-004-021**      **University of Nebraska - Lincoln**      **3174**  
Interaction of radiation with planetary gases  
*Period*      *Obligations*  
02/23/73-05/31/82      FY81 \$85,000      TOTAL \$394,731  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Samson, J A      HQ-SL/Murphy, R E      31-Atmos Sci  
HQ-SL/Brunk, W E

**NGT 28-004-800**      **University of Nebraska - Lincoln**      **3175**  
The effect of moisture stress on multispectral radiation from agricultural crops  
*Period*      *Obligations*  
09/01/80-08/31/82      FY81 \$11,500      TOTAL \$22,700  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Blad, B L      HQ-LC/Carter, C H      39-Env Sci, NEC

**NSG 5391**      **University of Nebraska - Lincoln**      **3176**  
Ultraviolet spectrophotometry of Cepheids  
*Period*      *Obligations*  
07/01/79-06/30/82      FY81 \$5,000      TOTAL \$27,800  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Schmidt, E G      GSFC/Bogges, A      11-Astronomy  
Parsons, S B

**NAS13-168**      **University of Nebraska-Omaha**      **3177**  
Large scale identification of irrigated lands application systems verification and transfer (ASVT) project  
*Period*      *Obligations*  
12/01/80-08/31/81      FY81 \$16,983      TOTAL \$16,983  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Rundguist, D C      NSTL/Patterson, F A      32-Geological Sci

## NEVADA

**NAG 2-114**      **Univ of Nevada - Desert Res Inst**      **3178**  
Stratospheric cloud condensation nuclei sampling program  
*Period*      *Obligations*  
04/01/81-12/31/81      FY81 \$20,000      TOTAL \$20,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Rogers, C F      ARC/Inn, E C      31-Atmos Sci

**NAS 8-32975**      **Univ of Nevada - Desert Res Inst**      **3179**  
Atmospheric cloud physics laboratory cloud forming experiment for the first (ACPL) mission  
*Period*      *Obligations*  
03/01/78-11/30/81      FY81 \$204,096      TOTAL \$546,496  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Kocmond, W C      MSFC/Smith, R E      31-Atmos Sci  
MSFC/Torkar, D E

**NAS 8-32977**      **Univ of Nevada - Desert Res Inst**      **3180**  
Atmospheric cloud physics laboratory ice crystal growth experiment  
*Period*      *Obligations*  
03/01/78-11/30/81      FY81 \$98,275      TOTAL \$183,275  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hallot, J      MSFC/Smith, R E      31-Atmos Sci  
MSFC/Anderson, B J

# **NASA'S UNIVERSITY PROGRAM** **NEVADA (Continued)**

**NAS 8-33273**      **Univ of Nevada - Desert Res Inst**      **3181**  
 Complex aerosol nucleation experiment ACPL-2  
*Period*      *Obligations*  
 02/16/79-11/30/81      **FY81 \$92,287**      **TOTAL \$159,790**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Kocmond, W C      MSFC/Fallon, R A      31-Atmos Sci  
                                  MSFC/Smith, R E

**NAS 8-33820**      **Univ of Nevada - Desert Res Inst**      **3182**  
 Cloud condensation nuclei measurement workshop  
*Period*      *Obligations*  
 05/23/80-09/10/81      **FY81**      **TOTAL \$99,956**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Kocmond, W      MSFC/Smith, R E      31-Atmos Sci  
                                  MSFC/Anderson, J B

**NAG 1-84**      **University of Nevada - Las Vegas**      **3183**  
 Prediction of steady and unsteady airloads in porous wall wind tunnels  
*Period*      *Obligations*  
 11/01/80-10/31/81      **FY81 \$32,553**      **TOTAL \$32,553**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Fromme, J A      LARC/Bland, S R      41-Aero Engr  
 Goldberg, M A

**NCC 2-134**      **University of Nevada - Reno**      **3184**  
 Proposal to implement, flight test and analyze the non-precision and precision approach capability of the weather radar approach system (WRAPS)  
*Period*      *Obligations*  
 04/15/81-04/14/82      **FY81 \$89,731**      **TOTAL \$89,731**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Chisholm, J P      ARC/Anderson, D J      41-Aero Engr  
                                  ARC/Bull, J S

**NSG 2291**      **University of Nevada - Reno**      **3185**  
 Computations and turbulent flow modeling in support of helicopter rotor technology  
*Period*      *Obligations*  
 12/01/77-11/31/81      **FY81 \$35,702**      **TOTAL \$142,440**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Rose, W C      ARC/Presley, L L      41-Aero Engr  
 Kleppe, J A      ARC/Murphy, J D

## **NEW HAMPSHIRE**

**NAG 3-13**      **Dartmouth College**      **3186**  
 Ductility of polycrystalline nickel aluminum  
*Period*      *Obligations*  
 02/01/80-01/30/82      **FY81 \$39,999**      **TOTAL \$79,439**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Schulson, E M      LERC/Whittenberger, J D      47-Materials Engr

**NAG 5-159**      **Dartmouth College**      **3187**  
 Geological and geobotanical mapping of the Caraiba region in Brazil  
*Period*      *Obligations*  
 04/01/81-03/31/82      **FY81 \$30,000**      **TOTAL \$30,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Birnie, R W      GSFC/Kouns, C W      32-Geological Sci

**NAG 8-305**      **Dartmouth College**      **3188**  
 Optical observations of High Energy Astronomical Observatory-B objects  
*Period*      *Obligations*  
 01/20/80-01/19/81      **FY81**      **TOTAL \$9,819**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Mook, D E      MSFC/Jones, J B      11-Astronomy  
 Boley, F I  
 Buff, J S

**NCC 5-22**      **Dartmouth College**      **3189**  
 An investigation of vegetation and other Earth resources parameters using LANDSAT and other remote sensing data  
*Period*      *Obligations*  
 02/01/80-02/28/82      **FY81 \$90,000**      **TOTAL \$210,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Stoiber, R E      GSFC/Ungar, S G      32-Geological Sci  
 Birnie, R W

**NSG 2397**      **Dartmouth College**      **3190**  
 Optical constants of transition metals  
*Period*      *Obligations*  
 07/01/79-06/30/82      **FY81 \$42,392**      **TOTAL \$124,402**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Chrsty, R W      ARC/Cooper, D M      13-Physics

**NSG 3253**      **Dartmouth College**      **3191**  
 Thermomechanical effects in high speed seal rubs  
*Period*      *Obligations*  
 02/26/79-02/25/82      **FY81 \$32,265**      **TOTAL \$91,165**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Kennedy, F E, Jr      LERC/Bill, R C      47-Materials Engr  
                                  LERC/Ludwig, L P

**NSG 5348**      **Dartmouth College**      **3192**  
 Magnetopause studies using satellite data  
*Period*      *Obligations*  
 05/01/79-01/31/82      **FY81 \$32,083**      **TOTAL \$62,499**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Sonnerup, B U      GSFC/Wende, C      32-Geological Sci

**NAG 5-130**      **University of New Hampshire - Durham**      **3193**  
 Studies of solar wind minor ions  
*Period*      *Obligations*  
 01/01/81-12/31/81      **FY81 \$34,545**      **TOTAL \$34,545**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Hollweg, J V      GSFC/Ogilvie, K W      13-Physics  
 Fisk, L A

**NASA'S UNIVERSITY PROGRAM**  
**NEW HAMPSHIRE (Continued)**

**NAG 6-12**      **University of New Hampshire - Durham**      **3194**  
Investigation of auroral electrodynamics and argon (plasma)  
release for controlled studies

<i>Period</i>	<i>Obligations</i>	
04/23/81-04/22/82	FY81 \$99,118	TOTAL \$99,118
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnoldy, R L	WFC/Early, L J	19-Phys Sci, NEC
Kaufmann, R L	WFC/Pless, R H	

**NAGW 52**      **University of New Hampshire - Durham**      **3195**  
Analysis of University of New Hampshire ATS-6 data multiple  
spacecraft studies

<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/82	FY81 \$35,000	TOTAL \$64,950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Moore, T E	HQ-SC/Mayr, H G	32-Geological Sci
	HQ-SC/Schmerling, E R	

**NAGW 76**      **University of New Hampshire - Durham**      **3196**  
Theoretical studies group on the physics of the solar atmosphere  
and the solar wind

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$190,000	TOTAL \$371,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fisk, L A	HQ-SC/Birmingham, T J	13-Physics
	HQ-SC/Newton, G P	

**NAS 5-23761**      **University of New Hampshire - Durham**      **3197**  
Hardware phase of the solar gamma ray experiment for the Solar  
Maximum Mission

<i>Period</i>	<i>Obligations</i>	
10/01/76-04/14/83	FY81 \$485,000	TOTAL \$3,881,726
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chupp, E L	GSFC/Underwood, C	31-Atmos Sci
Forrest, D J	GSFC/Corrigan, J P	

**NAS 5-24354**      **University of New Hampshire - Durham**      **3198**  
Analysis and interpretation of Pioneer 10 and 11 data

<i>Period</i>	<i>Obligations</i>	
10/16/77-10/15/81	FY81 \$21,000	TOTAL \$94,737
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Webber, W R	GSFC/Trainor, J H	13-Physics

**NAS 5-25420**      **University of New Hampshire - Durham**      **3199**  
Compton telescope experiment for the gamma-ray observatory  
definition phase

<i>Period</i>	<i>Obligations</i>	
11/21/78-06/30/81	FY81 \$372,927	TOTAL \$696,489
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lockwood, J A	GSFC/Davis, M A	11-Astronomy

**NAS 5-25642**      **University of New Hampshire - Durham**      **3200**  
Cosmic ray experiment data analysis and interpretation

<i>Period</i>	<i>Obligations</i>	
04/03/79-09/01/80	FY81	TOTAL \$8,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fisk, L A	GSFC/Von Rosenvinge, T T	13-Physics

**NAS 5-26645**      **University of New Hampshire - Durham**      **3201**  
Definition phase of the D-1 detector subsystem for the imaging  
Compton telescope

<i>Period</i>	<i>Obligations</i>	
09/01/81-11/30/82	FY81 \$569,073	TOTAL \$569,073
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lockwood, J A	GSFC/Davis, M A	11-Astronomy

**NCC 2-27**      **University of New Hampshire - Durham**      **3202**  
Controlled ecology life support system workshops The biological  
problems and experimental program

<i>Period</i>	<i>Obligations</i>	
10/01/79-11/30/81	FY81 \$123,595	TOTAL \$231,515
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Moore, B	ARC/MacElroy, R D	51-Biological Sci

**NGL 30-002-021**      **University of New Hampshire - Durham**      **3203**  
Investigation and development of techniques for solar neutron  
and gamma ray detection

<i>Period</i>	<i>Obligations</i>	
02/28/66-01/31/82	FY81 \$130,000	TOTAL \$1,587,365
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chupp, E L	HQ-SC/Holt, S S	11-Astronomy
	HQ-SC/Kaluzienski, L J	

**NGR 30-002-052**      **University of New Hampshire - Durham**      **3204**  
Research program in area of cosmic ray and X-ray astronomy

<i>Period</i>	<i>Obligations</i>	
02/12/70-09/30/81	FY81 \$123,000	TOTAL \$1,320,185
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Webber, W R	HQ-SC/Gilman, D A	11-Astronomy
	HQ-SC/Holt, S S	

**NSG 5316**      **University of New Hampshire - Durham**      **3205**  
Collaborative research of solar phenomena-solar maximum  
mission

<i>Period</i>	<i>Obligations</i>	
07/01/79-03/31/82	FY81 \$11,100	TOTAL \$52,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fisk, L A	GSFC/Wende, C	31-Atmos Sci

**NSG 6022**      **University of New Hampshire - Durham**      **3206**  
Rocket study of auroral processes

<i>Period</i>	<i>Obligations</i>	
05/01/78-06/30/81	FY81	TOTAL \$187,796
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnoldy, R L	WFC/Early, L J	19-Phys Sci, NEC
Kaufmann, R L	WFC/Pless, R H	

**NSG 7411**      **University of New Hampshire - Durham**      **3207**  
Theoretical studies in solar particle physics

<i>Period</i>	<i>Obligations</i>	
10/01/77-10/31/81	FY81 \$37,936	TOTAL \$136,065
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fisk, L A	HQ-SC/Chipman, E	13-Physics

**NASA'S UNIVERSITY PROGRAM  
NEW HAMPSHIRE (Continued)**

**NSG 7481**      **University of New Hampshire - Durham**      **3208**  
Application of a double Compton telescope to measurements of the 1-15 MeV extra-terrestrial gamma rays

<i>Period</i>	<i>Obligations</i>	
03/01/78-02/28/82	FY81 \$94,719	TOTAL \$153,819
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lockwood, J A	HQ-SC/Holt, S S	11-Astronomy
	HQ-SC/Kaluzienski, L J	

**NEW JERSEY**

**NCC 2-40**      **College of Medicine & Dentistry - NJ**      **3209**  
To determine the rhythmicity of circulating catecholamines in normal and chronically bedrested subjects

<i>Period</i>	<i>Obligations</i>	
12/01/79-09/30/81	FY81 \$1,750	TOTAL \$20,750
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Natelson, B H	ARC/Sharp, J C	56-Medical Sciences

**NAG 1-108**      **Princeton University**      **3210**  
Generation and visualization on techniques for large scale vortex structures

<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/81	FY81 \$19,872	TOTAL \$19,872
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Curtiss, H C	LARC/Hefner, J N	41-Aero Engr
	LARC/Bushnell, D M	

**NAG 1-152**      **Princeton University**      **3211**  
Development of the laser Doppler velocimeter for turbulence measurements in nitrogen

<i>Period</i>	<i>Obligations</i>	
02/04/81-02/03/82	FY81 \$20,000	TOTAL \$20,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miles, R B	LARC/Hoppe, J C	19-Phys Sci, NEC
Zimmerman, M	LARC/Hunter, W W	

**NAG 2-96**      **Princeton University**      **3212**  
Numerical calculations of transonic flows past complex aerodynamic configurations

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$49,950	TOTAL \$49,950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jameson, A	ARC/Hicks, R M	41-Aero Engr

**NAG 2-98**      **Princeton University**      **3213**  
An analytical study of the stability and control vertical take-off and landing airships

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$41,964	TOTAL \$41,964
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Curtiss, H C	ARC/Talbot, P D	41-Aero Engr
Putman, W F	ARC/Miura, H	

**NAG 2-109**      **Princeton University**      **3214**  
Three-dimensional shock wave/turbulent boundary layer interaction experiments

<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81 \$49,973	TOTAL \$49,973
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Settles, G S	ARC/Horstman, C C	41-Aero Engr
Bogdonoff, S M	ARC/Marvin, J G	

**NAG 3-8**      **Princeton University**      **3215**  
Coupling of transport and chemical processes in catalytic combustion

<i>Period</i>	<i>Obligations</i>	
12/01/79-06/30/82	FY81 \$55,038	TOTAL \$104,533
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bracco, F V	LERC/Szaniszlo, A J	41-Aero Engr
Bruno, C		
Walsh, P M		

**NAG 3-110**      **Princeton University**      **3216**  
Development and validation of an input/output model of general aviation aircraft fuel efficiency

<i>Period</i>	<i>Obligations</i>	
10/01/80-03/30/82	FY81 \$92,870	TOTAL \$92,870
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sweet, L M	LERC/Seidel, R C	41-Aero Engr
Curtis, H C	LERC/Szanca, E M	

**NAG 3-221**      **Princeton University**      **3217**  
Dynamics of nonlinear engine structural systems including damping

<i>Period</i>	<i>Obligations</i>	
10/05/81-10/04/82	FY81 \$49,358	TOTAL \$49,358
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dowell, E	LERC/McAleese, J D	46-Mech Engr

**NAG 5-48**      **Princeton University**      **3218**  
Absorption measures of galactic halo gas

<i>Period</i>	<i>Obligations</i>	
05/01/80-11/30/81	FY81 \$12,500	TOTAL \$25,068
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
York, D G	GSFC/Bogges, A	11-Astronomy
Songaila, A		
Cowie, L		

**NAG 8-306**      **Princeton University**      **3219**  
Radiatively colling clusters

<i>Period</i>	<i>Obligations</i>	
03/01/80-06/18/81	FY81	TOTAL \$3,499
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cowie, L L	MSFC/Jones, J B	11-Astronomy
Fabian, A C		
Nulsen, P		

**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

**NAG 8-363** **Princeton University** **3220**  
Compact V-V groups of galaxies  
*Period* *Obligations*  
07/01/80-06/30/82 **FY81** **TOTAL \$1,400**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Bahcall, N A MSFC/Swearingen, J C 11-Astronomy

**NAG 8-420** **Princeton University** **3221**  
Galaxy halos  
*Period* *Obligations*  
07/28/81-07/27/82 **FY81 \$5,000** **TOTAL \$5,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Behcall, N A MSFC/Stone, J F 11-Astronomy

**NAGW 10** **Princeton University** **3222**  
Gaseous halos of galaxies  
*Period* *Obligations*  
11/01/79-04/30/83 **FY81 \$55,000** **TOTAL \$124,338**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
York, D HQ-SC/Weiler, E J 11-Astronomy  
HQ-SC/Boggess, N W

**NAGW 120** **Princeton University** **3223**  
Extragalactic astrophysics Young galaxies and intergalactic medium  
*Period* *Obligations*  
11/15/80-11/14/82 **FY81 \$201,273** **TOTAL \$201,273**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Ostriker, J P HQ-SP/Taylor, T C 13-Physics  
HQ-SP/Heninger, L C

**NAGW 240** **Princeton University** **3224**  
Study of the structure of turbulent shear flows at supersonic speeds and huge Reynolds numbers  
*Period* *Obligations*  
09/01/81-08/31/82 **FY81 \$124,965** **TOTAL \$124,965**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Bogdonoff, S HQ-RT/Hicks, G 41-Aero Engr  
Smits, A HQ-RT/Brown, C E

**NAS 1-15758** **Princeton University** **3225**  
Navion modification and flight test support  
*Period* *Obligations*  
03/30/79-03/15/82 **FY81 \$136,470** **TOTAL \$282,340**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Stengel, R F LARC/Downing, D R 41-Aero Engr  
LARC/Bryant, W H.

**NAS 1-15764** **Princeton University** **3226**  
Investigation of flying qualities criteria for single pilot instrument flight operations  
*Period* *Obligations*  
04/05/79-11/30/82 **FY81 \$30,000** **TOTAL \$109,139**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Stengel, R F LARC/Abbott, T S 41-Aero Engr  
LARC/Garren, J F, Jr

**NAS 5-23576** **Princeton University** **3227**  
Orbital operations, data reduction and analysis, and OAO guest investigator program  
*Period* *Obligations*  
09/01/76-02/15/82 **FY81 \$783,000** **TOTAL \$4,134,027**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Spitzer, L, Jr GSFC/Gemmell, J 11-Astronomy

**NAS 5-24486** **Princeton University** **3228**  
Microwave and theoretical studies for Cosmic Background Explorer satellite  
*Period* *Obligations*  
03/01/78-04/30/82 **FY81 \$25,000** **TOTAL \$147,912**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wilkinson, D T GSFC/Mather, J C 11-Astronomy  
GSFC/Donohoe, M J

**NAS 5-25084** **Princeton University** **3229**  
Data and operations team leader for the space telescope project  
*Period* *Obligations*  
05/23/78-12/31/84 **FY81 \$81,807** **TOTAL \$303,840**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Groth, E J GSFC/Hobbs, R 11-Astronomy

**NAS 5-25896** **Princeton University** **3230**  
Laser geodynamics experiment study of polar motion, plate rigidity and plate motions  
*Period* *Obligations*  
11/02/79-02/01/83 **FY81 \$54,200** **TOTAL \$130,500**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Morgan, W J GSFC/Stephanides, C C 32-Geological Sci  
Smith, D E

**NAS 5-26268** **Princeton University** **3231**  
Design, development and fabrication of interstellar medium absorption profile spectrograph experiment  
*Period* *Obligations*  
08/21/80-08/31/83 **FY81 \$368,528** **TOTAL \$703,528**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Jenkins, E B GSFC/Cyphers, H 11-Astronomy

**NAS 8-32614** **Princeton University** **3232**  
Develop and test mathematical models of the three dimensional flow field and particle motions  
*Period* *Obligations*  
08/23/77-04/30/82 **FY81 \$50,000** **TOTAL \$258,586**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Saville, D A MSFC/Williams, J R 13-Physics  
MSFC/Snyder, R



**NASA'S UNIVERSITY PROGRAM**  
**NEW JERSEY (Continued)**

**NAS 8-33345** **Princeton University** **3233**  
Investigate accretion flows in the Perseus cluster galaxies  
*Period* *Obligations*  
02/14/79-02/11/81 **FY81** **TOTAL \$3,499**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Cowie, L L **MSFC/Jones, J B, Jr** **11-Astronomy**  
Fabian, A C  
Nulsen, P E

**NCC 2-94** **Princeton University** **3234**  
Aircraft position measurement using laser beacon systems  
*Period* *Obligations*  
08/15/80-02/28/82 **FY81 \$94,000** **TOTAL \$174,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Miles, R B **ARC/Biggers, J** **41-Aero Engr**  
Sweet, L M

**NGL 31-001-007** **Princeton University** **3235**  
Theoretical and experimental studies of ultraviolet phenomena of astronomical interest and galactic gas dynamics  
*Period* *Obligations*  
05/06/63-08/30/83 **FY81 \$46,382** **TOTAL \$2,123,560**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Spitzer, L, Jr **HQ-SC/Weiler, E J** **11-Astronomy**  
**HQ-SC/Boggess, N W**

**NGL 31-001-252** **Princeton University** **3236**  
Air traffic control technology  
*Period* *Obligations*  
11/15/71-01/31/84 **FY81 \$75,000** **TOTAL \$718,333**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Stengel, R F **LARC/Downing, D R** **41-Aero Engr**  
Curtiss, H C **LARC/MacE, W D**  
Sweet, L M

**NGT 31-001-800** **Princeton University** **3237**  
Graduate student researchers program  
*Period* *Obligations*  
09/01/81-08/31/82 **FY81 \$11,924** **TOTAL \$11,924**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Bryan, K **HQ-LC/Carter, C H** **31-Atmos Sci**

**NSG 1587** **Princeton University** **3238**  
Command and stability augmentation techniques for aircraft with control saturation  
*Period* *Obligations*  
01/01/79-10/31/81 **FY81 \$16,950** **TOTAL \$42,180**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Stengel, R F **LARC/Schy, A A** **41-Aero Engr**  
**LARC/Young, J W**

**NSG 1630** **Princeton University** **3239**  
Preliminary investigation of the external flow analysis for density measurements at high altitude  
*Period* *Obligations*  
07/01/79-07/31/82 **FY81 \$89,710** **TOTAL \$164,765**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Bienkowski, G K **LARC/Blanchard, R C** **41-Aero Engr**  
**LARC/Jones, J J**

**NSG 2194** **Princeton University** **3240**  
Transonic flow around wings, bodies and wing-body configurations  
*Period* *Obligations*  
11/01/76-10/31/81 **FY81 \$29,500** **TOTAL \$242,024**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Dowell, E H **ARC/Chyu, W J** **41-Aero Engr**  
Williams, M H

**NSG 2366** **Princeton University** **3241**  
Turbulence measurements in high speed flows by resonant fluorescence  
*Period* *Obligations*  
01/01/79-12/31/81 **FY81 \$49,979** **TOTAL \$139,213**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Miles, R B **ARC/McKenzie, R L** **13-Physics**

**NSG 3176** **Princeton University** **3242**  
Mass driver development  
*Period* *Obligations*  
12/01/77-07/31/81 **FY81** **TOTAL \$314,200**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
O'Neill, G K **LERC/Banks, B** **42-Astro Engr**

**NSG 3178** **Princeton University** **3243**  
Internal combustion engine flame propagation and emissions  
Small scale turbulence modeling and large scale eddy resolution  
*Period* *Obligations*  
12/15/77-12/14/79 **FY81** **TOTAL \$199,343**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sirignano, W A **LERC/Cassidy, J F** **46-Mech Engr**  
Gany, A **LERC/Kempke, E E**

**NSG 3292** **Princeton University** **3244**  
Unsteady transonic aerodynamics of cascades  
*Period* *Obligations*  
10/01/79-09/29/81 **FY81** **TOTAL \$64,600**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Dowell, E H **LERC/Braun, W H** **41-Aero Engr**

**NSG 5248** **Princeton University** **3245**  
Observational research on the IUE satellite  
*Period* *Obligations*  
03/01/78-06/30/82 **FY81 \$5,900** **TOTAL \$26,212**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Jenkins, E B **GSFC/Boggess, A** **11-Astronomy**  
Wallerstein, G  
Silk, J

**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

**NSG 5277** **Princeton University** **3246**  
Oblique magnetic focusing  
*Period* *Obligations*  
07/01/78-01/31/82 **FY81** **TOTAL \$197,086**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
York, D G GSFC/Williams, J T 13-Physics  
Jenkins, E B

**NSG 5382** **Princeton University** **3247**  
Velocity distribution of interstellar clouds in distant spiral arms  
and in Magellanic clouds  
*Period* *Obligations*  
07/01/79-06/31/81 **FY81** **TOTAL \$20,215**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
York, D G GSFC/Boggess, A 11-Astronomy  
Songaila, A  
Boksenberg, A

**NSG 5415** **Princeton University** **3248**  
Study of the fluctuations in the cosmic X-ray background  
*Period* *Obligations*  
09/14/79-06/30/81 **FY81** **TOTAL \$11,498**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Turners, E L GSFC/Corrigan, J P 11-Astronomy

**NSG 7256** **Princeton University** **3249**  
Research in extragalactic astrophysics  
*Period* *Obligations*  
07/01/76-12/31/83 **FY81 \$52,526** **TOTAL \$93,960**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Bahcall, N A HQ-SC/Weiler, E J 11-Astronomy  
HQ-SC/Boggess, N G

**NSG 7280** **Princeton University** **3250**  
The effect of gravity and weightlessness on the development and  
regeneration of the giant Coenocyte Caulerpa  
*Period* *Obligations*  
10/01/76-10/31/81 **FY81 \$55,000** **TOTAL \$240,000**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Jacobs, W P HQ-SB/Halstead, T W 51-Biological Sci

**NSG 7302** **Princeton University** **3251**  
New radiometers for balloon 3 K isotropy experiment  
*Period* *Obligations*  
11/15/76-12/31/82 **FY81 \$58,003** **TOTAL \$165,811**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Wilkinson, D HQ-SC/Boggess, N W 11-Astronomy  
HQ-SC/Weiler, E J

**NSG 7568** **Princeton University** **3252**  
The geomorphic role of water/ice on Mars  
*Period* *Obligations*  
03/15/79-08/31/81 **FY81 \$11,788** **TOTAL \$62,150**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Judson, S HQ-SL/Boyce, J M 32-Geological Sci  
HQ-SL/Holt, H E.

**NSG 7602** **Princeton University** **3253**  
The origin of maghemite on Mars  
*Period* *Obligations*  
07/01/79-09/30/81 **FY81 \$23,643** **TOTAL \$123,538**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Judson, S HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/Boyce, J M

**NSG 7618** **Princeton University** **3254**  
Photon counting image sensor development for astronomical  
applications  
*Period* *Obligations*  
07/01/79-09/14/82 **FY81 \$104,238** **TOTAL \$301,824**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Jenkins, E B HQ-SC/Weiler, E J 11-Astronomy  
HQ-SC/Boggess, N W

**NAG 5-70** **Rutgers University - New Brunswick** **3255**  
Observation of ultraviolet emission from globular clusters  
*Period* *Obligations*  
06/01/80-11/30/81 **FY81 \$7,000** **TOTAL \$19,500**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Matilsky, T GSFC/Boggess, A 11-Astronomy

**NAG 8-309** **Rutgers University - New Brunswick** **3256**  
Investigation of X-ray emission from broad-line radio galaxies  
using HEAO-2 and a search for X-ray emission from nearby  
quasi stellar objects using High Energy Astronomical Observatory-  
2  
*Period* *Obligations*  
02/25/80-02/24/82 **FY81** **TOTAL \$15,000**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Matilsky, T MSFC/Jones, J B 11-Astronomy

**NAG 8-328** **Rutgers University - New Brunswick** **3257**  
Search for decrease in radio pulsar X-ray luminosity during radio  
nulls  
*Period* *Obligations*  
03/01/80-02/28/81 **FY81** **TOTAL \$8,300**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Cheng, A F MSFC/Jones, J B 11-Astronomy

**NAGW 142** **Rutgers University - New Brunswick** **3258**  
Beryllium isotopes in meteorites  
*Period* *Obligations*  
03/01/81-02/28/82 **FY81 \$37,400** **TOTAL \$37,400**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Herzog, G F HQ-SL/French, B M 32-Geological Sci  
HQ-SL/Quaide, W L

**NAGW 177** **Rutgers University - New Brunswick** **3259**  
Olivine-magma density relations at high pressure and its bearing  
on the differentiation of the terrestrial planets  
*Period* *Obligations*  
04/01/81-03/31/82 **FY81 \$11,109** **TOTAL \$11,109**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Herzberg, C T HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/French, B M

**NASA'S UNIVERSITY PROGRAM  
NEW JERSEY (Continued)**

**NSG 3280 Rutgers University - New Brunswick 3260**  
The physics of turbulent flow

<i>Period</i>	<i>Obligations</i>	
06/01/79-05/31/81	FY81	TOTAL \$17,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, J A	LERC/Claus, R W	41-Aero Engr

**NSG 7327 Rutgers University - New Brunswick 3261**  
Research and studies of metal silicate relationships in howardite breccias

<i>Period</i>	<i>Obligations</i>	
02/01/77-02/28/82	FY81 \$38,013	TOTAL \$151,144
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hewins, R H	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7601 Rutgers University - New Brunswick 3262**  
Convection in spherical shells

<i>Period</i>	<i>Obligations</i>	
03/15/79-05/14/82	FY81 \$21,000	TOTAL \$58,572
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Zebib, A	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

**NSG 9065 Rutgers University - New Brunswick 3263**  
Flow behavior of extraterrestrial materials

<i>Period</i>	<i>Obligations</i>	
02/01/78-01/31/82	FY81 \$22,000	TOTAL \$70,335
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Klein, L C	JSC/Warner, J L	32-Geological Sci

**NAG 1-213 Stevens Institute of Technology 3264**  
Development of disturbances in a growing boundary layer

<i>Period</i>	<i>Obligations</i>	
09/02/81-09/01/82	FY81 \$78,554	TOTAL \$78,554
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Salwen, H	LARC/Dagenhart, J R	
Grosch, C E	29-Math Computer Sci, NEC	

**NAG 3-47 Stevens Institute of Technology 3265**  
The influence of gyroscopic forces of the dynamic behavior and flutter of rotating blades

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/30/82	FY81 \$53,000	TOTAL \$102,220
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sisto, F	LERC/Kiraly, L J	46-Mech Engr
Chang, A	LERC/Johns, R H	

**NEW MEXICO**

**NAG 8-347 New Mexico Institute of Mining & Tech 3266**  
Observation of Antares system soft X-ray observations from High Energy Astronomical Observatory-2 and the size and structure of the corona of AR Lacertae

<i>Period</i>	<i>Obligations</i>	
04/15/80-04/14/81	FY81	TOTAL \$16,536
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gibson, D M	MSFC/Jones, J B	11-Astronomy

**NAG 8-394 New Mexico Institute of Mining & Tech 3267**  
A radio survey of coronal X-ray stars

<i>Period</i>	<i>Obligations</i>	
06/25/81-09/24/82	FY81 \$5,715	TOTAL \$5,715
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gibson, D M	MSFC/Stone, J F	11-Astronomy
Fisher, P		

**NAS 8-33341 New Mexico Institute of Mining & Tech 3268**  
The size and structure of the corona of RT Lacertae and the X-ray variability of HR1099

<i>Period</i>	<i>Obligations</i>	
02/22/79-05/21/80	FY81	TOTAL \$12,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gibson, D M	MSFC/Jones, J B, Jr	11-Astronomy

**NAS 8-33817 New Mexico Institute of Mining & Tech 3269**  
Night-time/day-time orbital survey of lightning experiment support

<i>Period</i>	<i>Obligations</i>	
04/01/80-06/30/82	FY81 \$15,000	TOTAL \$28,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brooks, M	MSFC/Vaughan, O H	31-Atmos Sci
	MSFC/Christian, H J	

**NCA 2-511101 New Mexico Institute of Mining & Tech 3270**  
Photon and particle transfer in the compact radiation source in active galactic nuclei

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$5,000	TOTAL \$5,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Eilek, J A	ARC/Caroff, L J	11-Astronomy

**NCA 5-71 New Mexico Institute of Mining & Tech 3271**  
Cometary and astrophysical research activities

<i>Period</i>	<i>Obligations</i>	
11/01/76-09/30/81	FY81 \$20,000	TOTAL \$100,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Moore, E P	GSFC/Hobbs, R W	11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **NEW MEXICO (Continued)**

**NCA 5-81**      **New Mexico Institute of Mining & Tech**      **3272**  
 Analysis of solar wind velocity International Solar Polar Mission

Period	Obligations	
08/29/79-09/30/80	FY81	TOTAL \$5,799
Prin Invest	NASA Tech Officer	CASE Category
Moore, E P	GSFC/Brandt, J	11-Astronomy

**NAGW 110**      **New Mexico State University - Las Cruces**      **3273**  
 Continuation of a cosmic ray research program using a superconducting magnet spectrometer

Period	Obligations	
08/01/80-07/31/81	FY81 \$177,487	TOTAL \$177,487
Prin Invest	NASA Tech Officer	CASE Category
Golden, R	HQ-SC/Gilman, D A	11-Astronomy
	HQ-SC/Holt, S S	

**NAGW 167**      **New Mexico State University - Las Cruces**      **3274**  
 Analysis of Jovian atmospheric motions

Period	Obligations	
04/01/81-03/31/82	FY81 \$48,000	TOTAL \$48,000
Prin Invest	NASA Tech Officer	CASE Category
Beebe, R F	HQ-SL/Brinton, H C	13-Physics
	HQ-SL/Brunk, W E	

**NAS 5-24241**      **New Mexico State University - Las Cruces**      **3275**  
 Sounding rocket support

Period	Obligations	
08/01/77-08/31/80	FY81	TOTAL \$3,829,272
Prin Invest	NASA Tech Officer	CASE Category
Lawrence, H	GSFC/Pincus, B R	49-Engr, NEC
Connell, H		

**NAS 5-26332**      **New Mexico State University - Las Cruces**      **3276**  
 Field and analytical engineering support for the sounding rocket program

Period	Obligations	
09/10/80-09/09/83	FY81 \$1,477,497	TOTAL \$1,726,233
Prin Invest	NASA Tech Officer	CASE Category
Lawrence, H	GSFC/Pincus, B R	49-Engr, NEC
Connell, H		

**NAS 5-26662**      **New Mexico State University - Las Cruces**      **3277**  
 Provide developmental and technological support for the ultraviolet imaging telescope (UIT) shuttle electronics

Period	Obligations	
08/12/81-08/12/82	FY81: \$60,459	TOTAL \$60,459
Prin Invest	NASA Tech Officer	CASE Category
Gilcrease, A	GSFC/Blum, A	45-Elec Engr

**NAS 9-16092**      **New Mexico State University - Las Cruces**      **3278**  
 Development of antenna specifications for the advanced synthetic aperture radar (ASAR) project

Period	Obligations	
02/01/80-05/01/81	FY81	TOTAL \$35,000
Prin Invest	NASA Tech Officer	CASE Category
Carver, K	JSC/Krishen, K	13-Physics

**NAS 9-95509**      **New Mexico State University - Las Cruces**      **3279**  
 Design, development, measurement and fabrication of L-band and C-band antennas for use on C-130 aircraft multi-frequency microwave radiometer

Period	Obligations	
09/26/80-10/30/81	FY81 \$53,046	TOTAL \$53,046
Prin Invest	NASA Tech Officer	CASE Category
Carver, K	JSC/Fenner, R G	39-Env Sci, NEC

**NAS 9-95514**      **New Mexico State University - Las Cruces**      **3280**  
 Development of a remotely sensed and ground data base in the northern Great Plains for the study of salt affected soils

Period	Obligations	
04/06/81-12/31/81	FY81 \$75,000	TOTAL \$75,000
Prin Invest	NASA Tech Officer	CASE Category
Carver, K R	JSC/Krishen, K	39-Env Sci, NEC
Chaturvedi, L		

**NAS 9-95519**      **New Mexico State University - Las Cruces**      **3281**  
 Synthetic aperture radar antenna trade-off study

Period	Obligations	
06/30/81-12/30/81	FY81 \$19,990	TOTAL \$19,990
Prin Invest	NASA Tech Officer	CASE Category
Blevins, B	JSC/Krishen, K	39-Env Sci, NEC

**NAS 9-95522**      **New Mexico State University - Las Cruces**      **3282**  
 Provide analysis, evaluation and testing for SAR antenna expanded capability to obtain data for Earth observation applications as a part of an SAR payload on the shuttle

Period	Obligations	
09/24/81-11/15/81	FY81 \$106,691	TOTAL \$106,691
Prin Invest	NASA Tech Officer	CASE Category
Waterman, A	JSC/Nitschke, H A	39-Env Sci, NEC

**NGL 32-003-001**      **New Mexico State University - Las Cruces**      **3283**  
 Photographic patrol and study of physical conditions on the Moon and planets

Period	Obligations	
04/15/61-09/30/82	FY81	TOTAL \$2,019,021
Prin Invest	NASA Tech Officer	CASE Category
Beebe, R F	HQ-SL/Brunk, W E	11-Astronomy

**NSG 7622**      **New Mexico State University - Las Cruces**      **3284**  
 Speed-dependent collision effects on radar back-scattering from the ionosphere

Period	Obligations	
09/01/79-08/31/81	FY81	TOTAL \$65,000
Prin Invest	NASA Tech Officer	CASE Category
Theimer, O H	HQ-SC/Mayr, H G	19-Phys Sci, NEC
	HQ-SC/Schmerling, E R	

**NAG 1-95**      **University of New Mexico**      **3285**  
 Study of the photovoltaic effect in thin film barium titanate

Period	Obligations	
08/25/80-11/30/81	FY81	TOTAL \$44,317
Prin Invest	NASA Tech Officer	CASE Category
Grannemann, W W	LARC/Hayes, P J	45-Elec Engr

# **NASA'S UNIVERSITY PROGRAM** **NEW MEXICO (Continued)**

**NAG 3-207**                      **University of New Mexico**                      **3286**  
Effects of 3-dimensional cross-flow on compressible boundary  
layer characteristics, controls and separation  
*Period*                                      *Obligations*  
08/15/81-11/15/81                      FY81 \$20,000                      TOTAL \$20,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Chou, D C                      LERC/Hwang, D P                      41-Aero Engr

**NAG 8-386**                      **University of New Mexico**                      **3287**  
Radio galaxies in poor Zwicky clusters  
*Period*                                      *Obligations*  
12/08/80-12/07/82                      FY81 \$20,442                      TOTAL \$20,442  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Burns, J O                      MSFC/Stone, J F                      11-Astronomy

**NASW 2936**                      **University of New Mexico**                      **3288**  
Operation of NASA's industrial applications center  
*Period*                                      *Obligations*  
07/01/76-09/30/80                      FY81                      TOTAL \$1,048,864  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Unavailable                      HQ-ET/Bivins, R G                      99-Multi-Discip

**NASW 3408**                      **University of New Mexico**                      **3289**  
Operation of the technology application center at the University  
of New Mexico  
*Period*                                      *Obligations*  
10/01/80-09/30/81                      FY81 \$305,863                      TOTAL \$305,863  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Morain, S A                      HQ-ET/Bivins, R G                      99-Multi-Discip  
Zink, L B

**NGL 32-004-011**                      **University of New Mexico**                      **3290**  
Comparative study of lunar craters and terrestrial volcano-tectonic  
depressions in rhyolite ash-flow plateaus  
*Period*                                      *Obligations*  
10/12/64-12/31/79                      FY81                      TOTAL \$395,800  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Elston, W E                      HQ-SL/Dwornik, S E                      32-Geological Sci

**NGL 32-004-063**                      **University of New Mexico**                      **3291**  
Lunar sample analysis  
*Period*                                      *Obligations*  
01/06/71-01/31/82                      FY81 \$104,100                      TOTAL \$1,021,943  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Keil, K                      JSC/Warner, J L                      12-Chemistry

**NGL 32-004-064**                      **University of New Mexico**                      **3292**  
Mineralogy and chemistry of polymiot-brecciated stone meteor-  
ites  
*Period*                                      *Obligations*  
06/14/71-02/28/82                      FY81 \$94,249                      TOTAL \$751,598  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Keil, K                      HQ-SL/French, B M                      32-Geological Sci  
Fodor, R V                      HQ-SL/Quaide, W L  
Taylor, G J

**NGR 32-004-062**                      **University of New Mexico**                      **3293**  
Search for evidence of dynamic process  
*Period*                                      *Obligations*  
06/22/70-04/30/82                      FY81 \$31,000                      TOTAL \$264,073  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Elston, W E                      HQ-SL/Boyce, J M                      32-Geological Sci  
HQ-SL/Holt, H E

**NGT 32-004-770**                      **University of New Mexico**                      **3294**  
A precooperative education program  
*Period*                                      *Obligations*  
07/25/77-07/24/82                      FY81 \$21,784                      TOTAL \$65,992  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Robertson, M                      HQ-LC/Pohly, J G                      49-Engr, NEC  
HQ-U/Jenkins, H G

**NSG 7579**                      **University of New Mexico**                      **3295**  
Chemical weathering on Mars  
*Period*                                      *Obligations*  
03/01/79-02/28/82                      FY81 \$77,829                      TOTAL \$157,406  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Keil, K                      HQ-SL/Quaide, W L                      31-Atmos Sci  
HQ-SL/Boyce, J M

## **NEW YORK**

**NAG 1-44**                      **Brooklyn College**                      **3296**  
Photoelectrolysis of water with surface modified metal oxide  
electrodes  
*Period*                                      *Obligations*  
03/01/80-02/28/82                      FY81 \$34,986                      TOTAL \$67,706  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Tomkiewicz, M                      LARC/Byvik, C E                      19-Phys Sci, NEC  
Aronson, S                      LARC/Conway, E J

**NAG 1-6**                      **City College of New York**                      **3297**  
An adaptive learning control system for large flexible space  
structures  
*Period*                                      *Obligations*  
11/01/79-10/31/81                      FY81 \$73,847                      TOTAL \$114,440  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Thau, F E                      LARC/Montgomery, R C  
LARC/Horner, G C                      42-Astro Engr

**NAG 3-119**                      **City College of New York**                      **3298**  
A computer simulator for a mobile telephone system  
*Period*                                      *Obligations*  
11/01/80-10/31/81                      FY81 \$66,000                      TOTAL \$66,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Schilling, D L                      LERC/Salzman, J A                      45-Elec Engr  
LERC/Evans, D D

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NAG 3-122** City College of New York **3299**  
Experimental study of turbulence in blade end wall corner region  
*Period* *Obligations*  
10/20/80-10/18/82 FY81 \$128,082 TOTAL \$128,082  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Raj, R LERC/Boldman, D R 41-Aero Engr

**NAG 3-130** City College of New York **3300**  
Relaxation kinetics in organic glasses  
*Period* *Obligations*  
11/10/80-11/09/81 FY81 \$69,954 TOTAL \$69,954  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Alfano, R R LERC/Lauver, R W 13-Physics

**NAGW 22** City College of New York **3301**  
A study of the Martian fretted terrains-lightly cratered terrains boundary  
*Period* *Obligations*  
01/01/80-12/31/81 FY81 \$35,700 TOTAL \$64,248  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Weiss, D HQ-SL/Boyce, J M 32-Geological Sci  
HQ-SL/Holt, H E

**NAGW 59** City College of New York **3302**  
Equilibrium condensation of planetary materials  
*Period* *Obligations*  
04/01/80-03/31/81 FY81 TOTAL \$13,540  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Saxena, S K HQ-SL/Quaide, W L 32-Geological Sci  
HQ-SL/French, B M

**NAS 1-15669** City College of New York **3303**  
Verification Seasat wind speed and direction objectives and demonstration of global capability for extratropical cyclones  
*Period* *Obligations*  
02/27/79-11/15/81 FY81 \$6,000 TOTAL \$227,375  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Pierson, W J LARC/Schroeder, L C  
LARC/Jones, W L 33-Oceanography

**NAS 9-16473** City College of New York **3304**  
Investigation of digital encoding techniques for television transmission  
*Period* *Obligations*  
10/01/81-11/01/82 FY81 \$40,000 TOTAL \$40,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Schilling, D L JSC/Schadelbauer, S 45-Elec Engr

**NGL 33-013-040** City College of New York **3305**  
Theoretical research in astrophysics and astronomy  
*Period* *Obligations*  
04/23/69-11/30/83 FY81 \$20,000 TOTAL \$434,000  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Arons, M GSFC/Canuto, V 11-Astronomy  
GSFC/Strothers, R

**NGR 33-013-086** City College of New York **3306**  
Models for large scale meteorological prediction experiments  
*Period* *Obligations*  
10/01/73-01/31/82 FY81 \$36,909 TOTAL \$358,575  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Spar, J GSFC/Hansen, J E 31-Atmos Sci

**NSG 2348** City College of New York **3307**  
Theoretical problems of spiral galaxies  
*Period* *Obligations*  
11/01/78-12/31/81 FY81 \$20,000 TOTAL \$93,761  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Yuan, C ARC/Black, D C 11-Astronomy

**NSG 5334** City Univ of NY- Grad School & Univ Cen **3308**  
Relativistic effects in atoms  
*Period* *Obligations*  
02/01/79-02/28/82 FY81 \$21,846 TOTAL \$61,979  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Mittleman, M H GSFC/Temkin, A 13-Physics

**NAG 3-145** Clarkson College of Technology **3309**  
Abhesion of ice from helicopter rotor blades and aircraft wings  
*Period* *Obligations*  
12/29/80-03/28/82 FY81 \$55,015 TOTAL \$55,015  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Jellinek, H H LERC/Schmidt, H 12-Chemistry  
LERC/Reinmann, J J

**NAS 8-32944** Clarkson College of Technology **3310**  
Experiment for materials processing in space, physical phenomena in containerless glass processing  
*Period* *Obligations*  
02/23/78-02/23/83 FY81 \$122,000 TOTAL \$494,502  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Subramanian, R S MSFC/Fallon, R A 13-Physics  
Cole, R MSFC/Johnson, J L

**NAS 8-34308** Clarkson College of Technology **3311**  
Chairmanship of the science and engineering advisory board for the solidification experiment system project  
*Period* *Obligations*  
01/05/81-02/04/82 FY81 \$29,144 TOTAL \$29,144  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Wilcox, W R MSFC/Adams, W R 19-Phys Sci, NEC  
MSFC/Landers, J C

**NSG 1572** Clarkson College of Technology **3312**  
Convection effects during bridgman growth of semiconductors  
*Period* *Obligations*  
12/01/78-09/30/81 FY81 TOTAL \$103,775  
*Pnn Invest* *NASA Tech Officer* *CASE Category*  
Carlson, F LARC/Fripp, A L 13-Physics  
LARC/Crouch, R K

**NASA'S UNIVERSITY PROGRAM**  
**NEW YORK (Continued)**

**NAG 3-15** **Columbia University** **3313**  
A preliminary in viva study of the effects of electric stimulation  
on bone ingrowth to textured surfaces of orthopedic implants  
*Period Obligations*  
12/01/79-11/30/81 **FY81** **TOTAL \$25,412**  
*Prin Invest NASA Tech Officer CASE Category*  
Pawluk, R J LERC/Wintucky, E G  
56-Medical Sciences

**NAS 3-22464** **Columbia University** **3319**  
Study contract for multiple access and network studies for next  
generation communications satellites  
*Period Obligations*  
08/15/80-08/14/81 **FY81** **TOTAL \$88,769**  
*Prin Invest NASA Tech Officer CASE Category*  
Meadows, H LERC/Leroy, B E  
45-Elec Engr  
Schwarz, M

**NAG 3-57** **Columbia University** **3314**  
The role of cobalt in nickel base super alloys  
*Period Obligations*  
07/01/80-09/30/83 **FY81** **\$252,329** **TOTAL \$367,316**  
*Prin Invest NASA Tech Officer CASE Category*  
Tien, J K LERC/Stephens, J R 47-Materials Engr

**NAS 5-24457** **Columbia University** **3320**  
Solar flare X-ray polarimeter experiment  
*Period Obligations*  
02/22/78-04/30/83 **FY81** **\$195,645** **TOTAL \$1,117,255**  
*Prin Invest NASA Tech Officer CASE Category*  
Novick, R GSFC/Stouffer, C  
11-Astronomy

**NAG 5-33** **Columbia University** **3315**  
Research relative to the effect of subduction zones on the low-order  
of the geoid  
*Period Obligations*  
04/01/80-03/31/81 **FY81** **TOTAL \$30,000**  
*Prin Invest NASA Tech Officer CASE Category*  
Haxby, W F GSFC/Holweck, E C 32-Geological Sci  
Cochran, J R GSFC/Smith, D E

**NAS 5-25422** **Columbia University** **3321**  
Technical services operations and materials for the acquisitions,  
processing and cataloging of books, periodicals and other literature  
for Goddard Institute for Space Studies (GISS)  
*Period Obligations*  
04/01/79-09/30/80 **FY81** **TOTAL \$92,533**  
*Prin Invest NASA Tech Officer CASE Category*  
Yavarkovsky, J GSFC/Jennings, N  
99-Multi-Discip

**NAG 5-98** **Columbia University** **3316**  
Research of the relationship between gravity and bathymetry in  
the Pacific Ocean  
*Period Obligations*  
10/01/80-09/30/81 **FY81** **TOTAL \$50,000**  
*Prin Invest NASA Tech Officer CASE Category*  
Watts, T S GSFC/Welker, J 32-Geological Sci  
GSFC/Smith, D E

**NAS 5-25759** **Columbia University** **3322**  
Next generation communication satellites Multiple access and  
network studies  
*Period Obligations*  
07/09/79-09/08/80 **FY81** **TOTAL \$69,493**  
*Prin Invest NASA Tech Officer CASE Category*  
Stern, T E LERC/Leroy, B  
31-Atmos Sci  
Schwartz, M

**NAGW 18** **Columbia University** **3317**  
Reduction and analysis of stellar X-ray spectral and polarimetric  
data obtained with the Columbia University orbiting solar  
observatory 8  
*Period Obligations*  
10/01/79-10/31/81 **FY81** **\$30,000** **TOTAL \$60,000**  
*Prin Invest NASA Tech Officer CASE Category*  
Novick, R HQ-SC/Kaluzienski, L J 11-Astronomy  
HQ-SC/Holt, S S

**NAS 5-25891** **Columbia University** **3323**  
Analysis of intermediate wavelength anomalies over the oceans  
in magnetic fields monitor satellite and sea surface data  
*Period Obligations*  
02/01/80-11/30/81 **FY81** **TOTAL \$81,329**  
*Prin Invest NASA Tech Officer CASE Category*  
Labreque, J GSFC/Oseroff, H  
31-Atmos Sci

**NAGW 238** **Columbia University** **3318**  
Studies of bone and cartilage during periods of simulated  
weightlessness  
*Period Obligations*  
08/15/81-08/14/82 **FY81** **\$50,573** **TOTAL \$50,573**  
*Prin Invest NASA Tech Officer CASE Category*  
Doty, S B HQ-SB/Halstead, T W 51-Biological Sci

**NAS 5-26041** **Columbia University** **3324**  
Generate an investigation development plan and establish the  
preliminary interfaces between the space transportation system/  
Spacelab and instrument for the wide-band germanium X-ray  
spectrometer  
*Period Obligations*  
02/15/80-12/30/81 **FY81** **TOTAL \$119,317**  
*Prin Invest NASA Tech Officer CASE Category*  
Novick, R GSFC/Sing, M  
11-Astronomy

## NASA'S UNIVERSITY PROGRAM

### NEW YORK (Continued)

NAS 5-26398		Columbia University	3325
Technical services and materials for the library of Goddard Institute for Space Studies			
<i>Period</i>		<i>Obligations</i>	
11/01/80-10/30/81	FY81	\$69,855	TOTAL \$69,855
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Yavarkousky, J H	GSFC/Jennings, N		13-Physics

NAS 8-30753	Columbia University	3326
Design, development and operation of the HEAO mission B X-ray telescope experiment		
<i>Period</i>	<i>Obligations</i>	
06/01/74-09/30/82	FY81 \$407,549	TOTAL \$1,024,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Novick, R	MSFC/Stone, J F	11-Astronomy

NAS 8-33378		Columbia University	3327
Acoustic and gravity waves in the neutral atmosphere and the ionosphere			
Period	Obligations		
04/18/79-05/17/82	FY81	\$50,000	TOTAL \$204,618
Prin Invest	NASA Tech Officer	CASE Category	
Balachandran, N K	MSFC/West, G S	31-Atmos Sci	
	MSFC/Smith, R E		

<b>NCA 2-172101</b>	<b>Columbia University</b>	<b>3328</b>
<b>Cellular and subcellular characteristics of bone following spaceflight</b>		
<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/82	FY81 \$20,000	TOTAL \$20,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Doty, S B	ARC/Holton, E M	51-Biological Sci

<b>NCA 2-172102</b>	<b>Columbia University</b>	<b>3329</b>
<b>Biotelemetric analysis of pediatric long-bone reconstruction</b>		
<i>Period</i>		<i>Obligations</i>
<b>05/15/81-08/15/82</b>	<b>FY81 \$32,000</b>	<b>TOTAL \$32,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Pawluk, R J</b>	<b>ARC/Young, D R</b>	<b>56-Medical Sciences</b>
<b>Dick, H M</b>		

NCC 1-5		Columbia University		3330
The influence of auditory inputs on simulated flight operations				
<i>Period</i>		<i>Obligations</i>		
04/15/79-12/31/81	FY81	\$59,677	TOTAL	\$174,743
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Galanter, E	LARC/Harris Sr. R. L		41-Aero Engr	

NCC 5-3		Columbia University	3331
Research of the relationship between gravity and bathymetry in the Pacific Ocean			
Period		Obligations	
04/01/79-09/30/80	FY81	TOTAL	\$50,000
Prin Invest	NASA Tech Officer	CASE Category	
Watts, A B	GSFC/Smith, D E	32-Geological Sci	
McKenzie, D P			

NCC 5-16	Columbia University	3332
Multidisciplinary research in space science		
<i>Period</i>	<i>Obligations</i>	
05/15/79-09/30/81	FY81 \$183,925	TOTAL \$1,019,431
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Broecker, W S	GSFC/Travis, L	31-Atmos Sci
Flynn, G W	GSFC/Kerr, A R	

NCC 5-20		Columbia University		3333
Application of digital analysis of multi-spectral scanner to agro-environmental studies				
Period		Obligations		
01/01/80-12/31/81		FY81 \$113,010	TOTAL \$192,951	
Prin Invest		NASA Tech Officer	CASE Category	
Lewis, R A		GSFC/Ungar, S G	32-Geological Sci	
Goward, S N				

NGR 33-008-102	Columbia University	3334
Research in X-ray astronomy		
<i>Period</i>	<i>Obligations</i>	
01/30/68-02/08/82	FY81 \$250,000	TOTAL \$2,708,342
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Novick, R	GSFC/Guidotti, J	11-Astronomy
Long, K S		
Becker, R H		

NGR 33-008-146	Columbia University	3335
Study of strain buildup, release and earthquake prediction		
<i>Period</i>	<i>Obligations</i>	
02/09/71-04/30/81	FY81	TOTAL \$645,542
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, T L	GSFC/Smith, D E	19-Phys Sci, NEC
Scholz, C H		
Bilham, R G		

NSG 1450	Columbia University	3336
Aircraft cabin noise, prediction and optimization		
Period	Obligations	
09/06/77-01/05/82	FY81 \$66,824	TOTAL \$227,536
Prin Invest	NASA Tech Officer	CASE Category
Vaicartis, R	LARC/Mixson, J S	41-Aero Engr
	LARC/Stephens, D G	

NSG 1550	Columbia University	3337
Time-of-day effects on the numerical representation of community response to noise		
<i>Period</i>	<i>Obligations</i>	
07/01/78-06/30/82	FY81 \$49,793	TOTAL \$218,935
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Galanter, E	LARC/Stephens, D G	49-Engr, NEC

NSG 7105		Columbia University		3338
Calculation of collision cross sections of astrophysical interest				
Period		Obligations		
12/01/74-11/30/81	FY81	\$37,000	TOTAL	\$250,000
Prin Invest	NASA Tech Officer		CASE Category	
Flynn, G	HQ-SC/Bogges, N W		11-Astronomy	
Bernstein, R B	HQ-SC/Weiler, E J			



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**NSG 7466** **Columbia University** **3339**  
Petrogenesis of chondrules and chondrites  
*Period Obligations*  
05/01/78-03/31/80 **FY81** **TOTAL \$100,445**  
*Pnn Invest NASA Tech Officer CASE Category*  
Zindler, A HQ-SL/French, B M 32-Geological Sci

**NAG 1-18** **Cooper Union College** **3340**  
A comprehensive model to determine the effects of temperature and species fluctuations on reaction rates in turbulent reacting flows  
*Period Obligations*  
02/01/79-01/31/82 **FY81 \$44,693** **TOTAL \$64,582**  
*Pnn Invest NASA Tech Officer CASE Category*  
Chinitz, W LARC/Evans, J S 21-Mathematics  
LARC/Rogers, R C

**NAG 1-83** **Cornell University** **3341**  
Grapho-epitaxy of gallium-arsenic (GaAs)  
*Period Obligations*  
07/01/80-10/31/81 **FY81** **TOTAL \$47,466**  
*Pnn Invest NASA Tech Officer CASE Category*  
Ballantyne, J M LARC/Conway, E J 45-Elec Engr  
Wagner, D K LARC/Walker, G H

**NAG 1-107** **Cornell University** **3342**  
Rotor noise analyses and comparison to experiments  
*Period Obligations*  
11/01/80-10/31/81 **FY81 \$32,581** **TOTAL \$32,581**  
*Pnn Invest NASA Tech Officer CASE Category*  
George, A R LARC/Farassat, F 41-Aero Engr  
LARC/Brooks, T F

**NAG 1-208** **Cornell University** **3343**  
Gallium indium arsenic double heterostructure laser grown by molecular beam epitaxial  
*Period Obligations*  
08/15/81-08/14/82 **FY81 \$53,000** **TOTAL \$53,000**  
*Pnn Invest NASA Tech Officer CASE Category*  
Eastman, L F LARC/Magee, C J 45-Elec Engr  
Wood, C E LARC/Hendricks, H D

**NAG 2-13** **Cornell University** **3344**  
Analysis of transonic flow past helicopter rotors  
*Period Obligations*  
01/01/80-10/31/81 **FY81 \$13,216** **TOTAL \$23,716**  
*Pnn Invest NASA Tech Officer CASE Category*  
Caughey, D A ARC/Tauber, M E 41-Aero Engr

**NAG 2-70** **Cornell University** **3345**  
Stress induced long wavelength photoconductivity in doped silicon infrared detectors  
*Period Obligations*  
11/01/80-10/31/81 **FY81 \$38,300** **TOTAL \$38,300**  
*Pnn Invest NASA Tech Officer CASE Category*  
Houck, J R ARC/McCreight, C R 13-Physics  
Briotta, D A , Jr ARC/Goebel, J H

**NAG 3-19** **Cornell University** **3346**  
Analysis of rotational, transonic flows in turbomachinery  
*Period Obligations*  
01/01/80-12/30/81 **FY81 \$58,200** **TOTAL \$111,280**  
*Pnn Invest NASA Tech Officer CASE Category*  
Caughey, D A LERC/Johnson, G M 41-Aero Engr

**NAG 3-104** **Cornell University** **3347**  
Analysis of wind energy systems  
*Period Obligations*  
09/22/80-09/20/82 **FY81** **TOTAL \$34,310**  
*Pnn Invest NASA Tech Officer CASE Category*  
Thomas, R J LERC/Gilbert, L J 45-Elec Engr

**NAG 5-39** **Cornell University** **3348**  
Finite element research of the surface strain field adjacent to the San Andreas fault  
*Period Obligations*  
04/01/80-03/31/82 **FY81 \$36,634** **TOTAL \$64,634**  
*Pnn Invest NASA Tech Officer CASE Category*  
Turcotte, D L GSFC/Welker, J 32-Geological Sci  
Kulhawy, F H GSFC/Cohen, S C

**NAG 5-40** **Cornell University** **3349**  
Research of precise leveling space geodesy and geodynamics  
*Period Obligations*  
04/01/80-03/31/81 **FY81** **TOTAL \$40,000**  
*Pnn Invest NASA Tech Officer CASE Category*  
Oliver, J E GSFC/Harper, E L 32-Geological Sci  
Brown, L D GSFC/Allenby, R J

**NAGW 3** **Cornell University** **3350**  
The amylophast as a gravity sensing device in plants  
*Period Obligations*  
10/01/79-10/31/81 **FY81 \$54,900** **TOTAL \$106,800**  
*Pnn Invest NASA Tech Officer CASE Category*  
Leopold, A C HQ-SB/Halstead, T W 51-Biological Sci

**NAGW 90** **Cornell University** **3351**  
Theoretical studies of plasma convection and magnetic field reconnection in the Sun and in the Earth's magnetosphere  
*Period Obligations*  
06/01/80-05/31/82 **FY81 \$160,000** **TOTAL \$312,000**  
*Pnn Invest NASA Tech Officer CASE Category*  
Sudan, R N HQ-SC/Birmingham, T J 13-Physics

**NAGW 111** **Cornell University** **3352**  
A study of particle size sorting in Martian wind streaks  
*Period Obligations*  
11/01/80-10/31/81 **FY81 \$24,850** **TOTAL \$24,850**  
*Pnn Invest NASA Tech Officer CASE Category*  
Thomas, P HQ-SL/Boyce, J M 32-Geological Sci  
HQ-SL/Holt, H E

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**NAGW 116** **Cornell University** **3353**  
 Radar investigation of asteroids  
*Period Obligations*  
 11/01/80-10/31/81 **FY81 \$14,730 TOTAL \$14,730**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Ostro, S J HQ-SL/Brunk, W E 11-Astronomy  
 HQ-SL/Murphy, R E

**NAGW 193** **Cornell University** **3354**  
 Sulfur in the Jovian satellite system  
*Period Obligations*  
 04/01/81-03/31/82 **FY81 \$48,000 TOTAL \$48,000**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Veverka, J HQ-SL/Quaide, W L 32-Geological Sci  
 HQ-SL/Mitz, M

**NAS 5-23236** **Cornell University** **3355**  
 Feasibility study for infrared interferometer, spectrometer, and  
 radiometer for Mariner/Jupiter 1977 launch  
*Period Obligations*  
 05/01/73-10/31/81 **FY81 \$17,000 TOTAL \$95,300**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Gierasch, P J GSFC/Conrath, B J 13-Physics  
 GSFC/Hanel, R A

**NAS 5-26669** **Cornell University** **3356**  
 Ten (Ge-Ga) gallium-doped geranium photo-conductors  
*Period Obligations*  
 08/20/81-11/20/81 **FY81 \$20,000 TOTAL \$20,000**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Harwit, M GSFC/Moseley, S H 19-Phys Sci, NEC

**NASW 3342** **Cornell University** **3357**  
 Set up a computer system for the spacecraft planetary imaging  
 facility at Cornell  
*Period Obligations*  
 10/01/79-10/31/81 **FY81 \$39,804 TOTAL \$125,804**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Veverka, J HQ-SL/Boyce, J M 32-Geological Sci  
 HQ-SL/Quaide, W L

**NCA 2-175001** **Cornell University** **3358**  
 The motion of circumplanetary particles The origin and evolution  
 of planetary rings, and possible dust coatings of regular  
 satellites  
*Period Obligations*  
 02/01/80-01/31/82 **FY81 \$10,010 TOTAL \$16,555**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Burns, J A ARC/Pollack, J B 31-Atmos Sci

**NCC 5-2** **Cornell University** **3359**  
 Finite element research of the surface field adjacent to the San  
 Andreas fault  
*Period Obligations*  
 04/01/79-03/31/80 **FY81 TOTAL \$31,899**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Turcotte, D L GSFC/Cohen, S C 11-Astronomy  
 Kulhawy, F H

**NCC 5-4** **Cornell University** **3360**  
 Research of precise leveling, space geodesy and geodynamics  
*Period Obligations*  
 04/01/79-03/31/80 **FY81 TOTAL \$60,000**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Oliver, J GSFC/Allenby, R J 32-Geological Sci  
 Brown, L D

**NGL 33-010-082** **Cornell University** **3361**  
 The study of lunar and planetary surfaces and atmospheres  
*Period Obligations*  
 09/23/68-04/30/82 **FY81 \$49,600 TOTAL \$820,518**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Sagan, C HQ-SL/Murphy, R E 31-Atmos Sci

**NGL 33-010-171** **Cornell University** **3362**  
 A program in remote sensing  
*Period Obligations*  
 02/14/72-05/01/83 **FY81 TOTAL \$1,000,000**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Philipson, W R HQ-ET/Vitale, J A 39-Env Sci, NEC

**NGL 33-010-186** **Cornell University** **3363**  
 Studies of thermal structure and motion of planetary at-  
 mospheres  
*Period Obligations*  
 04/18/73-06/14/82 **FY81 \$89,871 TOTAL \$407,663**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Gierasch, P J HQ-SL/Murphy, R E 31-Atmos Sci  
 HQ-SL/Brunk, W E

**NGR 33-010-081** **Cornell University** **3364**  
 2 to 4 micron spectroscopy of Mars  
*Period Obligations*  
 03/01/73-10/31/81 **FY81 \$113,320 TOTAL \$590,087**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Houck, J R ARC/Haughney, L C 11-Astronomy  
 Forrest, W J

**NGR 33-010-101** **Cornell University** **3365**  
 An integrated program in exobiology and problems related to  
 origin of life  
*Period Obligations*  
 10/09/69-12/31/81 **FY81 \$104,500 TOTAL \$974,445**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Sagan, C E HQ-SB/Devincenzi, D L 12-Chemistry  
 Khare, B N

**NGR 33-010-108** **Cornell University** **3366**  
 Implications of convection within the Moon  
*Period Obligations*  
 05/18/70-01/31/82 **FY81 \$31,315 TOTAL \$260,881**  
*Prnn Invest NASA Tech Officer CASE Category*  
 Turcotte, D L HQ-SL/Quaide, W L 32-Geological Sci  
 HQ-SL/French, B E

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<b>NGR 33-010-146</b>	<b>Cornell University</b>	<b>3367</b>
<b>Submillimeter astronomical spectrometry from aircraft</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/16/72-10/31/81</b>	<b>FY81 \$32,000</b>	<b>TOTAL \$326,714</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Harwit, M O</b>	<b>ARC/Mason, R H</b>	<b>11-Astronomy</b>
	<b>ARC/Haughney, L C</b>	

<b>NGR 33-010-161</b>	<b>Cornell University</b>	<b>3368</b>
<b>Studies of the magnetospheres of Earth and Jupiter</b>		
<i>Period</i>	<i>Obligations</i>	
01/18/72-06/30/82	FY81 \$153,000	TOTAL \$512,790
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Farley, D T	HQ-SC/Mayr, H G	13-Physics
	HO-SC/Schmerling, E R	

<b>NGR 33-010-182</b>	<b>Cornell University</b>	<b>3369</b>
<b>16 to 40 micron spectroscopy of Jupiter</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/20/72-10/31/81</b>	<b>FY81</b>	<b>TOTAL \$245,084</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Houck, J R</b>	<b>ARC/Cameron, R M</b>	<b>11-Astronomy</b>
<b>Forrest, W J</b>		
<b>Pollack, J B</b>		

<b>NGR 33-010-220</b>	<b>Cornell University</b>	<b>3370</b>
<b>Interdisciplinary investigations of Mariner 9 data</b>		
<i>Period</i>	<i>Obligations</i>	
12/05/73-10/31/81	FY81 \$53,335	<b>TOTAL \$401,126</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sagan, C E	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

NSG 1642		Cornell University		3371
Devices for integrated electro-optic circuits				
<i>Period</i>			<i>Obligations</i>	
07/15/79-07/14/82	FY81	\$70,000	TOTAL	\$169,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Ballantyne, J M	LARC/Magee, C J		45-Elec Engr	
	LARC/Hendricks, H D			

<b>NSG 1651</b>	<b>Cornell University</b>	<b>3372</b>
<b>Holographic fabrication of gratings in metal substrates</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/15/79-10/31/81</b>	<b>FY81 \$60,445</b>	<b>TOTAL \$128,012</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Ballantyne, J M</b>	<b>LARC/Conway, E J</b>	<b>45-Elec Engr</b>
<b>Wagner, D K</b>	<b>LARC/Walker, G H</b>	

NSG 2347	Cornell University	3373
Far infrared spectral line observations from the G P Kuiper Airborne Observatory		
<i>Period</i>	<i>Obligations</i>	
10/01/78-10/31/81	FY81 \$124,255	TOTAL \$318,755
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Harwit, M	ARC/Haughney, L C	11-Astronomy

NSG 2382	Cornell University	3374
A study to assess the potential for using long chain polymers dissolved in water to study turbulence		
Period	Obligations	
06/01/79-05/31/82	FY81 \$48,000	TOTAL \$113,000
Prin Invest	NASA Tech Officer	CASE Category
Lumley, J L	ARC/Chapman, G T	41-Aero Engr

<b>NSG 2408</b>	<b>Cornell University</b>	<b>3375</b>
<b>Aerobic biological waste treatment for closed ecological life support systems</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/15/79-05/14/82</b>	<b>FY81 \$59,960</b>	<b>TOTAL \$154,960</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Shuler, M L</b>	<b>ARC/Wydeven, T</b>	<b>39-Env Sci, NEC</b>

<b>NSG 2412</b>	<b>Cornell University</b>	<b>3376</b>
<b>Molecular spectroscopy from the Kuiper Airborne Observatory</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/01/79-09/30/82</b>	<b>FY81 \$75,000</b>	<b>TOTAL \$127,640</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Beckwith, S</b>	<b>ARC/Haughney, L C</b>	<b>11-Astronomy</b>

NSG 3019	Cornell University	3377
Flow processes in combustors		
<i>Period</i>	<i>Obligations</i>	
07/01/74-07/31/81	FY81	TOTAL \$456,102
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gouldin, F C	LERC/Marek, C J	41-Aero Engr
Leibovich, S	LERC/Diehl, L A	
McLean, W J		

NSG 5060		Cornell University		3378
Comparison between calculated gravity anomalies for dynamic processes in the mantle and observations				
<i>Period</i>		<i>Obligations</i>		
04/01/75-09/30/79	FY81	TOTAL	\$110,000	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Turcotte, D L	GSFC/Cohen, S C		32-Geological Sci	

<b>NSG 6020</b>	<b>Cornell University</b>	<b>3379</b>
<b>Rocket investigation of neutral atmosphere ionosphere coupling and planetary electrodynamics</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/78-09/30/81</b>	<b>FY81 \$130,083</b>	<b>TOTAL \$288,651</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Kelley, M C</b>	<b>WFC/Early, L J</b>	<b>19-Phys Sci, NEC</b>
	<b>WFC/Pless, R H</b>	

<b>NSG 7156</b>	<b>Cornell University</b>	<b>3380</b>
<b>Physical studies of planetary surfaces</b>		
<i>Period</i>	<i>Obligations</i>	
07/01/75-09/30/81	FY81 \$48,590	TOTAL \$235,221
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Veverka, J	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Quaide, W L	

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**NSG 7235** **Cornell University** **3381**  
Light-induced amino acid transport by envelope vesicles of  
halobacterium halobium cells

Period	Obligations	
03/01/76-01/31/80	FY81: TOTAL \$100,500	
Prin Invest	NASA Tech Officer	CASE Category
MacDonald, R E	HQ-SB/Young, R S	51-Biological Sci

**NSG 7324** **Cornell University** **3382**  
Bolometer system

Period	Obligations	
04/01/77-10/31/82	FY81 \$92,180 TOTAL \$185,450	
Prin Invest	NASA Tech Officer	CASE Category
Houck, J R	HQ-SC/Bogges, N W	11-Astronomy
	HQ-SC/Weiler, E J	

**NSG 7445** **Cornell University** **3383**  
Consequences of past lunar tides, heating surface processes and  
orbital evolution

Period	Obligations	
04/01/78-04/30/80	FY81 TOTAL \$48,863	
Prin Invest	NASA Tech Officer	CASE Category
Burns, J A	HQ-SL/Quaide, W	31-Atmos Sci
	HQ-SL/French, B M	

**NSG 7487** **Cornell University** **3384**  
Astrophysical materials science theory

Period	Obligations	
10/01/78-10/28/81	FY81 \$63,621 TOTAL \$193,621	
Prin Invest	NASA Tech Officer	CASE Category
Ashcroft, N W	LERC/Brown, G V	13-Physics

**NSG 7488** **Cornell University** **3385**  
Research on ultrapressure materials science

Period	Obligations	
10/01/78-12/31/81	FY81 \$100,000 TOTAL \$500,000	
Prin Invest	NASA Tech Officer	CASE Category
Ruoff, A L	LERC/Brown, G V	47-Materials Engr

**NSG 7498** **Cornell University** **3386**  
Establish and operate a spacecraft planetary imagery facility (SPIF)  
at Cornell

Period	Obligations	
10/01/78-09/30/80	FY81 TOTAL \$153,277	
Prin Invest	NASA Tech Officer	CASE Category
Veverka, J	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7529** **Cornell University** **3387**  
Phylogeny of photosynthetic bacteria

Period	Obligations	
02/01/79-11/30/81	FY81 TOTAL \$18,119	
Prin Invest	NASA Tech Officer	CASE Category
Gibson, J	HQ-SB/Devincenzi, D L	51-Biological Sci

**NSG 7546** **Cornell University** **3388**  
Participation in the Mars data analysis program Global and  
regional studies of wind-indicators on the surface of Mars

Period	Obligations	
04/01/79-09/30/81	FY81 \$50,500 TOTAL \$140,200	
Prin Invest	NASA Tech Officer	CASE Category
Veverka, J	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7547** **Cornell University** **3389**  
Participation in the Mars data analysis comparative study of the  
surface of Phobos and Deimos

Period	Obligations	
03/01/79-03/31/81	FY81 TOTAL \$64,300	
Prin Invest	NASA Tech Officer	CASE Category
Veverka, J	HQ-SL/Boyce, J M	32-Geological Sci

**NSG 7593** **Cornell University** **3390**  
Dynamical studies of Phobos and Deimos

Period	Obligations	
03/01/79-11/01/81	FY81 \$66,152 TOTAL \$86,604	
Prin Invest	NASA Tech Officer	CASE Category
Burns, J A	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/Boyce, J M	

**NSG 7606** **Cornell University** **3391**  
Effects of photometric geometry on spectral reflectance mea-  
surements

Period	Obligations	
05/01/79-03/31/82	FY81 \$54,750 TOTAL \$142,860	
Prin Invest	NASA Tech Officer	CASE Category
Veverka, J	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NSG 7612** **Cornell University** **3392**  
Participation in the Mars data analysis program Analysis of  
cloud forms in Viking and Mariner 9 images

Period	Obligations	
04/01/79-10/30/81	FY81 \$59,800 TOTAL \$118,670	
Prin Invest	NASA Tech Officer	CASE Category
Gierasch, P J	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NSG 2259** **Cornell University - Medical Center** **3393**  
Central neural and neurochemical mechanisms subserving postural  
cardiovascular changes

Period	Obligations	
10/01/77-09/30/81	FY81 \$29,967 TOTAL \$179,967	
Prin Invest	NASA Tech Officer	CASE Category
Reis, D J	ARC/Sandler, H	59-Life Sci, NEC

<b>NGR 33-209-002</b>	<b>Hofstra University</b>	<b>3394</b>
Radar studies and application of measurements of ocean wave height and directional spectrum		
<i>Period</i>	<i>Obligations</i>	
03/28/72-01/31/82	FY81 \$42,308	TOTAL \$228,770
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Weissman, W E	LARC/Johnson, J W	45-Elec Engr
	LARC/Jones, W L	

<b>NAG 1-155</b>	<b>New York University</b>	<b>3396</b>
<b>Numerical simulation of the interaction of acoustic sources with a jet</b>		
<i>Period</i>	<i>Obligations</i>	
03/04/81-03/03/82	FY81 \$5,000	TOTAL \$5,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Grossmann, W	LARC/Maestrello, L	41-Aero Engr

NAG 5-73		New York University		3397
Multifrequency observations of selected extragalactic sources				
<i>Period</i>		<i>Obligations</i>		
06/01/80-11/30/81	FY81	\$11,000	TOTAL	\$23,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>			<i>CASE Category</i>
Glassgold, A E	GSFC/Bogges, A			11-Astronomy
Bregman, J N				
Huggins, P J				

<b>NAG 5-122</b>	<b>New York University</b>	<b>3398</b>
<b>Observations of the Lyman discontinuity in low redshift clouds</b>		
<i>Period</i>	<i>Obligations</i>	
<b>11/01/80-12/31/81</b>	<b>FY81 \$12,000</b>	<b>TOTAL \$12,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Glassgold, A E</b>	<b>GSFC/Bogges, A</b>	<b>11-Astronomy</b>
<b>Breman, J N</b>		
<b>Huggins, P H</b>		

<b>NAG 8-337</b>	<b>New York University</b>	<b>3399</b>
<b>Gaseous coronae of galaxies and red quasi stellar objects</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/80-02/28/82</b>	<b>FY81</b>	<b>TOTAL \$11,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Glassgold, A E</b>	<b>MSFC/Jones, J B</b>	<b>11-Astronomy</b>

<b>NAG 8-343</b>	<b>New York University</b>	<b>3400</b>
<b>Super nova-like quasars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/01/80-02/28/82</b>	<b>FY81</b>	<b>TOTAL \$4,500</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Huggins, P J</b>	<b>MSFC/Jones, J B</b>	<b>11-Astronomy</b>

NAG 8-358		New York University	3401
The galactic supernova remnant S147			
Period		Obligations	
07/01/80-12/31/81	FY81		TOTAL \$5,300
Prin Invest	NASA Tech Officer		CASE Category
Glassgold, A E	MSFC/Swearingen, J C		11-Astronomy

NAG 8-393		New York University	3402
Red quasi stellar objects II			
<i>Period</i>		<i>Obligations</i>	
06/18/81-06/17/82	FY81	\$7,424	TOTAL \$7,424
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Glassgold, A E	MSFC/Stone, J F		11-Astronomy

<b>NAGW 194</b>	<b>New York University</b>	<b>3403</b>
<b>Symposium on the origin of nebula</b>		
<i>Period</i>	<i>Obligations</i>	
09/01/81-03/31/82	FY81 \$4,500	<b>TOTAL \$4,500</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Glassgold, A E	HQ-SC/Bogges, N W	11-Astronomy
	HO-SC/Weiler, E J	

<b>NCA 2-525101</b>	<b>New York University</b>	<b>3404</b>
<b>High resolution methods for the solution of 2-D flows with discontinuities</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/15/81-10/15/81</b>	<b>FY81 \$15,000</b>	<b>TOTAL \$15,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Harten, A</b>	<b>ARC/Warming, R F</b>	<b>21-Mathematics</b>

NGR 33-016-196		New York University		3405
Physical properties of molecular clouds				
<i>Period</i>			<i>Obligations</i>	
09/01/73-06/30/82		FY81 \$42,000	TOTAL	\$271,823
<i>Prn Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Glassgold, A E		HQ-SC/Boguess, N W		13-Physics
Levv, P W		HO-SC/Weiler, E J		

<b>NGR 33-016-201</b>	<b>New York University</b>	<b>3406</b>
<b>Study of transonic flow over yawed wings</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/81-10/31/81	FY81	TOTAL \$401,662
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Garabedian, P R	ARC/Hicks, R M	41-Aero Engr
McFadden, G		

<b>NGT 33-016-800</b>	<b>New York University</b>	<b>3407</b>
Graduate student training program in computational fluid dynamics		
<i>Period</i>	<i>Obligations</i>	
07/01/80-12/31/81	<b>FY81 \$100,000</b>	<b>TOTAL \$175,000</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Garabedian, P R	HQ-RT/Graves, R A, Jr	41-Aero Engr

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**NSG 1579**                      **New York University**                      **3408**  
Computational fluid dynamics on the star  
*Period*                                      *Obligations*  
12/01/78-11/30/81                      FY81 \$150,000                      TOTAL \$450,000  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Garabedian, P R                      LARC/South, J C , Jr                      21-Mathematics

**NSG 3059**                      **New York University**                      **3409**  
Analysis of experiments on hydrodynamics instability in the  
absence of gravity  
*Period*                                      *Obligations*  
06/01/75-08/29/82                      FY81                      TOTAL \$63,614  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Ting, L                      LERC/Sarsfield, L P                      49-Engr, NEC

**NSG 5034**                      **New York University**                      **3410**  
Research program in climatology and meteorology  
*Period*                                      *Obligations*  
01/01/75-01/31/82                      FY81 \$157,600                      TOTAL \$720,713  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Isaacson, E                      GSFC/Halem, M                      31-Atmos Sci  
Stoker, J J

**NSG 5130**                      **New York University**                      **3411**  
Short term numerical weather prediction and very long term  
climate modelling  
*Period*                                      *Obligations*  
10/01/76-10/31/83                      FY81 \$114,000                      TOTAL \$339,812  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Ghil, M                      GSFC/Halem, M                      31-Atmos Sci

**NSG 5411**                      **New York University**                      **3412**  
Multifrequency observations of selected galaxies and extragalactic  
sources  
*Period*                                      *Obligations*  
10/01/79-09/30/80                      FY81                      TOTAL \$4,793  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Huggins, P J                      GSFC/Boggess, A                      11-Astronomy

**NSG 7591**                      **New York University**                      **3413**  
Modeling the Viking boundary layer and soil thermal measure-  
ments on Mars  
*Period*                                      *Obligations*  
03/01/79-02/28/80                      FY81                      TOTAL \$15,000  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Hoffert, M I                      HQ-SL/Murphy, R E                      31-Atmos Sci  
HQ-SL/Brunk, W E

**NSG 7636**                      **New York University**                      **3414**  
To conduct research on the effectiveness of government sponsored  
civilian research and development  
*Period*                                      *Obligations*  
07/01/79-10/31/81                      FY81                      TOTAL \$168,524  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Fusfeld, H I                      HQ-ET/Roberson, F I                      99-Multi-Discip  
Nelson, R R                      HQ-ET/Ault, L A

**NAG 1-183**                      **Polytechnic Institute of New York**                      **3415**  
A study of shock-fitting procedures for transonic flow  
*Period*                                      *Obligations*  
05/01/81-04/30/82                      FY81 \$29,930                      TOTAL \$29,930  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Grossman, B                      LARC/South, J C , Jr                      41-Aero Engr

**NAGW 51**                      **Polytechnic Institute of New York**                      **3416**  
Investigate traveling ionospheric disturbances in Earth's iono-  
sphere by analysis of satellite to satellite differential Doppler  
data available from the 1975 Apollo-Soyuz test project  
*Period*                                      *Obligations*  
08/01/80-07/31/81                      FY81                      TOTAL \$26,000  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Gross, S H                      HQ-SC/Hedin, A E                      13-Physics  
HQ-SC/Schmerling, E R

**NGR 33-006-070**                      **Polytechnic Institute of New York**                      **3417**  
Synthesis of polypeptides, sugar phosphates and polynucleotides  
from intermediates under simulated conditions  
*Period*                                      *Obligations*  
04/26/73-06/14/82                      FY81 \$88,300                      TOTAL \$413,994  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Eirich, F R                      HQ-SB/Devincenzi, D L                      12-Chemistry

**NSG 1248**                      **Polytechnic Institute of New York**                      **3418**  
Calculation of supersonic flow past aircraft with shocks  
*Period*                                      *Obligations*  
10/01/75-10/31/81                      FY81 \$60,354                      TOTAL \$338,361  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Moretti, G                      LARC/Salas, M D                      41-Aero Engr

**NSG 2147**                      **Polytechnic Institute of New York**                      **3419**  
Exploratory synthesis of new fire safe polymeric materials  
*Period*                                      *Obligations*  
05/01/76-05/31/82                      FY81 \$86,828                      TOTAL \$346,416  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Pearce, E M                      ARC/Rosser, R W                      12-Chemistry

**NSG 5284**                      **Polytechnic Institute of New York**                      **3420**  
A morphological study of waves in the thermosphere  
*Period*                                      *Obligations*  
07/01/78-12/31/81                      FY81 \$24,452                      TOTAL \$72,104  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Gross, S H                      GSFC/Spencer, N W                      31-Atmos Sci

**NAG 4-2**                      **Queensborough Community College**                      **3421**  
The feasibility of performing in-flight measurements of air flow  
transition and boundary layers using a hot wire anemometry  
system  
*Period*                                      *Obligations*  
02/05/80-02/04/81                      FY81                      TOTAL \$29,714  
*Prnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Kousourou, G                      DFRC/Bouge, R K                      41-Aero Engr  
DFRC/Bennett, D L

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**NAG 4-6** **Queensborough Community College** **3422**  
Sensor redundancy management A conditional probability approach to determining thresholds and minimizing false alarms  
*Period Obligations*  
03/01/81-02/28/82 **FY81 \$26,611 TOTAL \$26,611**  
*Pnn Invest NASA Tech Officer CASE Category*  
Scalzo, F DFRG/Montgomery, T D  
21-Mathematics

**NCC 2-108** **Queensborough Community College** **3423**  
Application of FDM to fiber optic data bussing in real time redundant, distributed computing systems  
*Period Obligations*  
09/01/80-10/31/81 **FY81 \$57,484 TOTAL \$57,484**  
*Pnn Invest NASA Tech Officer CASE Category*  
Zanger, H LERC/Webster, L 45-Elec Engr

**NAG 1-61** **Rensselaer Polytechnic Institute** **3424**  
Data acquisition and analysis of range-finding system for space construction  
*Period Obligations*  
05/01/80-08/31/81 **FY81 \$300 TOTAL \$60,300**  
*Pnn Invest NASA Tech Officer CASE Category*  
Shen, C N LARC/Barker, L K 21-Mathematics

**NAG 1-171** **Rensselaer Polytechnic Institute** **3425**  
Parameter estimation of large flexible aerospace structures with application to control of maypole deployable reflector  
*Period Obligations*  
04/01/81-03/31/82 **FY81 \$137,588 TOTAL \$137,588**  
*Pnn Invest NASA Tech Officer CASE Category*  
Balas, M J LARC/Armstrong, E S 45-Elec Engr  
LARC/Taylor, L W

**NAG 3-22** **Rensselaer Polytechnic Institute** **3426**  
Creep-fatigue interactions in nickel base superalloys  
*Period Obligations*  
01/01/80-12/30/81 **FY81 \$35,000 TOTAL \$65,000**  
*Pnn Invest NASA Tech Officer CASE Category*  
Duquette, D J LERC/Miner, R V 47-Materials Engr  
Stoloff, N S LERC/Hirshberg, M H

**NAG 3-37** **Rensselaer Polytechnic Institute** **3427**  
Proposal structural dynamics studies for fan/turbine design  
*Period Obligations*  
03/03/80-06/14/82 **FY81 \$75,000 TOTAL \$125,000**  
*Pnn Invest NASA Tech Officer CASE Category*  
Loewy, R G LERC/Kiraly, L J 46-Mech Engr  
Shephard, M LARC/Johns, R H

**NAG 3-175** **Rensselaer Polytechnic Institute** **3428**  
Low temperature growth and electrical characterization of insulators for gas  
*Period Obligations*  
05/01/81-04/30/82 **FY81 \$69,995 TOTAL \$69,995**  
*Pnn Invest NASA Tech Officer CASE Category*  
Borrego, J M LERC/Liu, D C 19-Phys Sci, NEC  
Ghandhi, S K

**NAG 3-188** **Rensselaer Polytechnic Institute** **3429**  
Research on gallium arsenide diffused junction solar cells  
*Period Obligations*  
06/25/81-09/25/81 **FY81 \$26,500 TOTAL \$26,500**  
*Pnn Invest NASA Tech Officer CASE Category*  
Ghandi, S K LERC/Brinker, D 45-Elec Engr  
Borrego, J M

**NAG 3-199** **Rensselaer Polytechnic Institute** **3430**  
Tetrahydrofuran-containing polymers as battery separators  
*Period Obligations*  
09/01/81-08/31/82 **FY81 \$45,700 TOTAL \$45,700**  
*Pnn Invest NASA Tech Officer CASE Category*  
Moore, J A LERC/Gheibley, D W 12-Chemistry

**NAG 3-203** **Rensselaer Polytechnic Institute** **3431**  
Chemical vapor deposition of single crystalline silicon carbide (SiC) suitable for semi-conductor applications  
*Period Obligations*  
09/01/81-08/31/82 **FY81 \$50,000 TOTAL \$50,000**  
*Pnn Invest NASA Tech Officer CASE Category*  
Diefen, R J LERC/Powell, J A 47-Materials Engr

**NAG 3-205** **Rensselaer Polytechnic Institute** **3432**  
Emission infrared Fourier microspectrometer photometric study of fuel deposit formation  
*Period Obligations*  
08/15/81-08/14/83 **FY81 \$83,255 TOTAL \$83,255**  
*Pnn Invest NASA Tech Officer CASE Category*  
Lauer, J L GSFC/Seng, G T 12-Chemistry

**NAG 3-213** **Rensselaer Polytechnic Institute** **3433**  
Characterization of melting and freezing of fuels by thermal analysis  
*Period Obligations*  
10/15/81-10/14/82 **FY81 \$52,480 TOTAL \$52,480**  
*Pnn Invest NASA Tech Officer CASE Category*  
Moynihan, C T LERC/Friedman, R 43-Chem Engr

**NAS 8-32425** **Rensselaer Polytechnic Institute** **3434**  
Dendritic solidification at small supercooling  
*Period Obligations*  
03/01/77-06/30/82 **FY81 \$118,000 TOTAL \$313,290**  
*Pnn Invest NASA Tech Officer CASE Category*  
Glicksman, M E MSFC/Moore, W W, Jr 47-Materials Engr  
MSFC/Lacy, L L

**NAS 8-32690** **Rensselaer Polytechnic Institute** **3435**  
Solidification processes involving solutes  
*Period Obligations*  
07/24/78-10/31/80 **FY81 TOTAL \$82,000**  
*Pnn Invest NASA Tech Officer CASE Category*  
Glicksman, M E MSFC/Bannister, T C 12-Chemistry  
MSFC/Lacy, L L

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**NAS 8-32936**      **Rensselaer Polytechnic Institute**      **3436**  
 Vapor growth of alloy-type semiconductor crystals experiment  
*Period*      *Obligations*  
 03/20/78-03/20/83      **FY81**      **TOTAL \$354,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Wiedemeier, H      MSFC/Schaefer, D A      47-Materials Engr  
 Davidson, M C      MSFC/Zwiener, J M  
 Irene, E A

**NAS 8-33074**      **Rensselaer Polytechnic Institute**      **3437**  
 Study of nucleation and growth of immiscible phases AA  
*Period*      *Obligations*  
 06/01/78-09/30/79      **FY81**      **TOTAL \$31,364**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Ross, S      MSFC/Lacy, L L      13-Physics  
 Ross, S      MSFC/Witherow, W K  
 Nishioka, G

**NAS 8-33562**      **Rensselaer Polytechnic Institute**      **3438**  
 Data analysis and modeling of ultraviolet spectrometer and  
 polarimeter, experiment and other related experiments for Solar  
 Maximum Mission  
*Period*      *Obligations*  
 02/08/80-02/07/83      **FY81**      **TOTAL \$98,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Wu, S T      MSFC/Yates, I C      31-Atmos Sci  
                  MSFC/Zwiener, J M

**NASW 3279**      **Rensselaer Polytechnic Institute**      **3439**  
 Data acquisition and path selection decision making for an  
 autonomous roving vehicle  
*Period*      *Obligations*  
 03/01/79-08/31/80      **FY81**      **TOTAL \$91,366**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Yerazunis, S W      HQ-RT/Gevarter, W B      31-Atmos Sci  
 Frederick, D K      LARC/Wooley, C  
 Gisser, D G

**NCC 3-12**      **Rensselaer Polytechnic Institute**      **3440**  
 Interdisciplinary collaboration in tribology  
*Period*      *Obligations*  
 05/19/80-09/30/81      **FY81**      **TOTAL \$5,300**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Ling, F F      LERC/Wedeven, L D      46-Mech Engr

**NGL 33-018-003**      **Rensselaer Polytechnic Institute**      **3441**  
 Interdisciplinary materials research including fundamental physics  
 and chemistry of materials, environmental effects, and related  
 problems  
*Period*      *Obligations*  
 09/01/70-04/30/84      **FY81 \$400,000**      **TOTAL \$6,509,400**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Loewry, R G      HQ-RT/Greenfield, M A  
 Wiberly, S E      HQ-RT/Bersch, C F      47-Materials Engr

**NGR 33-018-148**      **Rensselaer Polytechnic Institute**      **3442**  
 Photochemical investigations of the atmosphere of other planets  
*Period*      *Obligations*  
 08/27/70-08/31/82      **FY81 \$66,286**      **TOTAL \$467,286**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Ferris, J P      HQ-SB/Devincenzi, D L      12-Chemistry  
 Greenberg, J M

**NSG 1510**      **Rensselaer Polytechnic Institute**      **3443**  
 Improved high modulus carbon fibers  
*Period*      *Obligations*  
 04/01/78-12/31/80      **FY81**      **TOTAL \$413,540**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Ansell, G S      LARC/Dicus, D L      47-Materials Engr  
 Diefendorf, R J

**NSG 1624**      **Rensselaer Polytechnic Institute**      **3444**  
 Investigation of passive shock wave-boundary layer control for  
 transonic airfoil drag reduction  
*Period*      *Obligations*  
 10/01/79-03/31/82      **FY81**      **TOTAL \$109,700**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Nagamatsu, H T      LARC/Harris, C D      41-Aero Engr  
 Brower, W B      LARC/Barnwell, R W

**NSG 1628**      **Rensselaer Polytechnic Institute**      **3445**  
 Free-electron laser from wave mechanical beats of two electron  
 beams  
*Period*      *Obligations*  
 07/01/79-12/31/81      **FY81**      **TOTAL \$42,200**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Lichenstein, R M      LARC/Meador, W E      13-Physics  
                  LARC/Hohl, F

**NSG 3170**      **Rensselaer Polytechnic Institute**      **3446**  
 Determination of physical and chemical states of lubricants in  
 concentrated contacts using infrared Fourier transform spectroscopy  
*Period*      *Obligations*  
 01/01/78-12/30/81      **FY81 \$46,335**      **TOTAL \$164,625**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Lauer, J L      LERC/Jones, W R, Jr      13-Physics

**NSG 3262**      **Rensselaer Polytechnic Institute**      **3447**  
 Suggested programs for unsteady turbine heat transfer  
*Period*      *Obligations*  
 05/01/79-09/29/82      **FY81 \$84,710**      **TOTAL \$210,670**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Mayle, R E      LERC/Vanfossen, G J, Jr      41-Aero Engr  
                  LERC/Simoneau, R J

**NCA 2-630001**      **Rockefeller University**      **3448**  
 Investigation of nucleic acid interaction with activated amino acids  
 in amino acid polymerization  
*Period*      *Obligations*  
 06/01/80-05/31/82      **FY81 \$27,995**      **TOTAL \$53,246**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Loew, G H      ARC/MacElroy, R D      51-Biological Sci



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**NSG 2380**                      **Rockefeller University**                      **3449**  
Vestibulocollic reflexes of otolith origin  
*Period*                                      *Obligations*  
04/01/79-12/31/81                      FY81 \$40,500                      TOTAL \$110,872  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wilson, V J                      ARC/Dauntun, N G                      51-Biological Sci

**NAG 5-24**                      **State Univ of New York - Albany**                      **3450**  
The structural and tectonic evolution of the north anotoleon fault  
*Period*                                      *Obligations*  
03/15/80-03/14/82                      FY81 \$70,000                      TOTAL \$140,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dewey, J F                      GSFC/Kouns, C W                      32-Geological Sci  
Burke, K C

**NAG 5-155**                      **State Univ of New York - Albany**                      **3451**  
Neotectonics of the Northern Caribbean plate boundary zone  
*Period*                                      *Obligations*  
04/01/81-03/31/82                      FY81 \$34,874                      TOTAL \$34,874  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Burke, K                      GSFC/Kouns, C W                      32-Geological Sci  
Dewey, J F

**NAS 8-32893**                      **State Univ of New York - Albany**                      **3452**  
Night-time and daytime orbital survey of lightning and convective phenomena experiment support  
*Period*                                      *Obligations*  
05/03/78-06/03/82                      FY81 \$10,000                      TOTAL \$40,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Vonnegut, B                      MSFC/Vaughn, O H, Jr                      39-Env Sci, NEC  
MSFC/Christian, H

**NAS 8-32947**                      **State Univ of New York - Albany**                      **3453**  
Static tube zero G electrophoresis of human pancreatic islets of Langerhans cells  
*Period*                                      *Obligations*  
04/07/78-11/14/80                      FY81 \$1,415                      TOTAL \$135,215  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Van Oss, C J                      MSFC/Williams, J R                      59-Life Sci, NEC  
MSFC/Snyder, R S

**NAS 8-33380**                      **State Univ of New York - Albany**                      **3454**  
Remote observations of severe storms  
*Period*                                      *Obligations*  
04/30/79-09/30/82                      FY81 \$51,175                      TOTAL \$274,956  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Orville, R E                      MSFC/Christian, H J                      31-Atmos Sci  
MSFC/Vaughan, O H

**NAS 9-15802**                      **State Univ of New York - Albany**                      **3455**  
Research study of non-invasive monitoring of cardio-pulmonary function  
*Period*                                      *Obligations*  
05/01/79-06/30/82                      FY81 \$50,000                      TOTAL \$108,149  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Farhi, L E                      JSC/Horngan, D J                      59-Life Sci, NEC

**NAS 9-15975**                      **State Univ of New York - Albany**                      **3456**  
Neurospora experiment  
*Period*                                      *Obligations*  
11/09/79-05/31/82                      FY81                      TOTAL \$50,700  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Sulzman, F M                      JSC/Nolte, R W                      51-Biological Sci  
Fuller, C A  
Moore-ede, M C

**NAS 9-16042**                      **State Univ of New York - Albany**                      **3457**  
Life science flight experiment      Inflight study of cardiovascular deconditioning definition phase  
*Period*                                      *Obligations*  
01/17/80-01/31/82                      FY81                      TOTAL \$42,345  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Farhi, L                      JSC/Peck, E E                      59-Life Sci, NEC

**NAS 9-16331**                      **State Univ of New York - Albany**                      **3458**  
Study errors applying NOAA six and eight data introduced by applying NOAA 6 and NOAA 8 AVHRR data as an estimator of vegetative indices  
*Period*                                      *Obligations*  
02/01/81-11/01/81                      FY81 \$48,450                      TOTAL \$48,450  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Duggin, M J                      JSC/Whitehead, V                      31-Atmos Sci

**NASW 3333**                      **State Univ of New York - Albany**                      **3459**  
Planetary subsurface water analyzer instrument development  
*Period*                                      *Obligations*  
10/01/79-04/30/82                      FY81 \$54,302                      TOTAL \$181,817  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Anderson, D M                      HQ-SL/Boyce, J M                      32-Geological Sci  
HQ-SL/Holt, J E

**NSG 2386**                      **State Univ of New York - Albany**                      **3460**  
Identification of tropospheric and stratospheric air by tracer  
*Period*                                      *Obligations*  
05/01/79-01/31/82                      FY81 \$36,141                      TOTAL \$85,141  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lazrus, A L                      ARC/Page, W A                      31-Atmos Sci

**NSG 3095**                      **State Univ of New York - Albany**                      **3461**  
Fundamentals of radiation tolerance in silicon solar cells  
*Period*                                      *Obligations*  
01/26/76-07/05/82                      FY81 \$65,000                      TOTAL \$325,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Corbett, J W                      LERC/Weinberg, I                      39-Env Sci, NEC  
LERC/Swartz, C R

**NSG 3138**                      **State Univ of New York - Albany**                      **3462**  
Analysis of global air sampling program data  
*Period*                                      *Obligations*  
01/10/77-09/09/80                      FY81                      TOTAL \$225,922  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Falconer, P                      LERC/Holdeman, J D                      31-Atmos Sci  
Pratt, R

**NASA'S UNIVERSITY PROGRAM**  
**NEW YORK (Continued)**

NSG 7093	State Univ of New York - Albany	3463
Photoelectric studies of the night glow		
<i>Period</i>		<i>Obligations</i>
12/23/74-09/30/80	FY81	TOTAL \$260,803
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Weinberg, J L	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

NSG 7241	State Univ of New York - Albany	3464
Studies of background starlight		
<i>Period</i>	<i>Obligations</i>	
07/01/76-05/31/81	FY81. \$2,742	TOTAL \$79,729
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Weinberg, J L	HQ-SC/Weiler, E J	11-Astronomy
	HQ-SC/Bogges, N W	

NSG 7501	State Univ of New York - Albany	3465
Radiation induced rotation of small celestial bodies		
<i>Period</i>	<i>Obligations</i>	
11/15/78-08/31/81	FY81	TOTAL \$39,612
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ratchliff, K F	HQ-RT/Whiting, E E	42-Astro Engr
	GSFC/Paddock, S J	

NAG 5-145		State Univ of New York - Binghamton		3466
Effects of the oceans on polar motion				
<i>Period</i>			<i>Obligations</i>	
03/01/81-02/28/82	FY81	\$27,460	TOTAL	\$27,460
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Dickman, S R	GSFC/Welker, J		32-Geological Sci	
	GSFC/Sanchez, B V			

NAS 2-10621	State Univ of New York - Binghamton	3467
Synchronization of primate circadian rhythms in space		
<i>Period</i>	<i>Obligations</i>	
04/01/80-07/31/83	FY81 \$35,000	TOTAL \$70,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sulzman, F M	ARC/Souza, K A	59-Life Sci, NEC

NGT 33-188-800	State Univ of New York - Binghamton		3468
Cardiovascular circadian rhythms			
<i>Period</i>	<i>Obligations</i>		
09/01/80-08/31/82	FY81	\$13,000	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Sulzman, F M	HQ-LC/	Carter, C H	51-Biological Sci

<b>NGT 33-188-801</b>		<b>State Univ of New York - Binghamton</b>	<b>3469</b>
<b>Graduate student researchers program</b>			
<i>Period</i>		<i>Obligations</i>	
<b>06/01/81-05/31/82</b>	<b>FY81</b>	<b>\$13,000</b>	<b>TOTAL \$13,000</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
<b>Jensen, R A</b>	<b>HQ-LC/Carter, C H</b>		<b>56-Medical Sciences</b>

NGR 33-015-108		State Univ of New York - Buffalo		3470
Planetary curriculum and related geologic research				
Period		Obligations		
06/02/70-03/31/82		FY81	\$50,709	TOTAL \$482,300
Prin Invest		NASA Tech Officer		CASE Category
Shapiro, I I		HQ-SL/Boyce, J M		32-Geological Sci
Counselman, C C		HQ-SL/Holt, H E		

NAG 2-56		State Univ of New York - Stony Brook	3471
Two to four micron spectroscopy		Hydroxyl ions and water of hydration in interstellar grains	
<i>Period</i>		<i>Obligations</i>	
10/01/80-09/30/82	FY81	\$32,994	TOTAL \$42,993
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Knacke, R	ARC/Haughney, L C		11-Astronomy

NAG 3-164		State Univ of New York - Stony Brook		3472
A microstructural study of plasma sprayed thermal barrier coatings				
Period		Obligations		
03/05/81-03/04/82		FY81 \$40,000	TOTAL	\$40,000
Prin Invest		NASA Tech Officer		CASE Category
Herman, H		LERC/Miller, R A		47-Materials Engr

NAG 5-7		State Univ of New York - Stony Brook	3473
Theoretical investigation of the mechanics of strike slip faulting in an anelastic Earth			
Period		Obligations	
02/01/80-01/31/81	FY81	TOTAL	\$37,100
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Melosh, H J	GSFC/Cohen, S C	32-Geological Sci	

NAG 5-151	State Univ of New York - Stony Brook		3474
Finite element investigation of lithosphere tectonics			
<i>Period</i>		<i>Obligations</i>	
03/15/81-03/14/82	FY81	\$47,600	TOTAL \$47,600
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Melosh, H J	GSFC/Welker, J		32-Geological Sci
	GSFC/Cohen, S C		

NAG 8-332	State Univ of New York - Stony Brook	3475
X-ray imaging observations of H II region molecular cloud complexes using High Energy Astronomical Observatory-B		
<i>Period</i>	<i>Obligations</i>	
01/15/80-02/14/81	FY81	TOTAL \$7,440
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simon, M	MSFC/Jones, J B	11-Astronomy

NAG 8-388	State Univ of New York - Stony Brook		3476
Study of Einstein observations of HII region/molecular cloud complexes			
<i>Period</i>	<i>Obligations</i>		
12/08/80-12/07/81	FY81	\$7,773	TOTAL \$7,773
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Simon, M	MSFC/Stone, J	F	11-Astronomy

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NAGW 25** State Univ of New York - Stony Brook 3477  
Rare gases in meteorites

Period	Obligations
02/01/80-03/31/82	FY81 \$81,262 TOTAL \$153,583
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Schaeffer, O A	HQ-SL/French, B M 32-Geological Sci
	HQ-SL/Quaide, W L

**NAGW 50** State Univ of New York - Stony Brook 3478  
Crater modification by gravity

Period	Obligations
03/01/80-02/28/82	FY81 \$55,911 TOTAL \$67,311
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Melosh, H J	HQ-SL/Quaide, W L 32-Geological Sci
	HQ-SL/French, B M

**NAGW 144** State Univ of New York - Stony Brook 3479  
The descriptive ecology at Hydra Toward a test core for ecological prediction

Period	Obligations
02/15/81-10/01/82	FY81 \$45,398 TOTAL \$45,398
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Slobodkin, L B	HQ-SB/Bredt, J H 54-Env Biology
	HQ-SB/Halstead, T W

**NAGW 160** State Univ of New York - Stony Brook 3480  
Interdisciplinary studies with Voyager Jupiter data

Period	Obligations
04/01/81-03/31/82	FY81 \$35,000 TOTAL \$35,000
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Caldwell, J J	HQ-SL/Brinton, H C 13-Physics
	HQ-SL/Brunk, W E

**NAS 1-16444** State Univ of New York - Stony Brook 3481  
Science support for the Earth radiation budget experiment (ERBE)

Period	Obligations
09/24/80-09/23/85	FY81 \$10,000 TOTAL \$41,000
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Cess, R D	LARC/Hall, J B 31-Atmos Sci
	LARC/Barkstrom, B R

**NAS 1-16607** State Univ of New York - Stony Brook 3482  
Study of dynamics of phytoplankton patches on Nantucket shoals

Period	Obligations
04/06/81-04/05/82	FY81 \$32,105 TOTAL \$32,105
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Wilson, R E	LARC/Esaias, W E 33-Oceanography
Carter, H M	LARC/Hypes, W

**NAS 2-10520** State Univ of New York - Stony Brook 3483  
Investigation on the effects of hypogravity on some critical cellular events in plant development

Period	Obligations
01/17/80-09/30/81	FY81 \$20,000 TOTAL \$29,748
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Krikorian, A D	ARC/Ferandin, J 51-Biological Sci
	ARC/Mancini, R E

**NAS 5-26395** State Univ of New York - Stony Brook 3484  
Energetic particle acceleration research

Period	Obligations
12/04/80-09/04/82	FY81 \$47,617 TOTAL \$47,617
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Forman, M A	GSFC/Ramoty, R 13-Physics

**NAS 8-32904** State Univ of New York - Stony Brook 3485  
Scientific investigations in support of the space telescope project

Period	Obligations
02/01/78-01/31/84	FY81 TOTAL \$139,500
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Caldwell, J J	MSFC/O'dell, C R 11-Astronomy

**NCA 2-760101** State Univ of New York - Stony Brook 3486  
An investigation of the effects of hot atom chemistry of minor constituents in the atmosphere of Jupiter and Saturn

Period	Obligations
02/01/81-01/31/83	FY81 \$26,059 TOTAL \$26,059
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Owens, T	ARC/Chang, S 31-Atmos Sci
Scattergood, T	

**NCC 3-2** State Univ of New York - Stony Brook 3487  
Analytic modeling of soot formation under fuel rich conditions

Period	Obligations
07/01/79-06/28/82	FY81 \$39,988 TOTAL \$109,554
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Yang, C H	LERC/Brabbs, T A 12-Chemistry
Berlad, A L	

**NCC 5-7** State Univ of New York - Stony Brook 3488  
Atmospheric pollution Development and application

Period	Obligations
04/09/79-11/30/81	FY81 \$83,965 TOTAL \$183,965
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Hogan, J S	GSFC/Stewart, R W 31-Atmos Sci
Hameed, S	

**NCC 5-23** State Univ of New York - Stony Brook 3489  
Planetary atmospheres research

Period	Obligations
01/15/80-03/31/82	FY81 \$116,833 TOTAL \$282,167
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Owen, T	GSFC/Hansen, J E 31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM  
NEW YORK (Continued)**

**NGL 33-015-130** State Univ of New York - Stony Brook 3490  
Lunar sample analysis

Period	Obligations
02/11/71-01/31/82	FY81 \$85,800 TOTAL \$1,115,858
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Lindsley, D H	JSC/Warner, J L 13-Physics

**NGR 33-015-139** State Univ of New York - Stony Brook 3491  
Quantitative spectroscopic measurements on the principal constituents in planetary atmospheres

Period	Obligations
04/12/71-05/31/82	FY81 \$40,513 TOTAL \$356,964
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Varanasi, P	HQ-SL/Murphy, R E 31-Atmos Sci
	HQ-SL/Brunk, W E

**NGR 33-015-141** State Univ of New York - Stony Brook 3492  
Spectroscopic observations of the planets

Period	Obligations
01/26/71-12/31/81	FY81 \$71,324 TOTAL \$337,663
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Owen, T	HQ-SL/Murphy, R E 11-Astronomy
	HQ-SL/Brunk, W E

**NGR 33-015-165** State Univ of New York - Stony Brook 3493  
Planetary atmospheres research

Period	Obligations
11/01/72-01/31/80	FY81 TOTAL \$507,420
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Owen, T	GSFC/Hansen, J E 31-Atmos Sci

**NGR 33-015-180** State Univ of New York - Stony Brook 3494  
Cosmic rays in interplanetary space

Period	Obligations
01/07/74-04/30/82	FY81 \$24,800 TOTAL \$148,854
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Forman, M A	HQ-SC/Ilman, D G 11-Astronomy
	HQ-SC/Opp, A G

**NGT 33-015-800** State Univ of New York - Stony Brook 3495  
Graduate student researchers program

Period	Obligations
06/01/81-05/31/82	FY81 \$10,500 TOTAL \$10,500
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Papike, J J	HQ-LC/Carter, C H 32-Geological Sci

**NGT 33-015-801** State Univ of New York - Stony Brook 3496  
Graduate student researchers program

Period	Obligations
08/01/81-07/31/82	FY81 \$8,000 TOTAL \$8,000
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Berlad, A L	HQ-LC/Carter, C H 46-Mech Engr

**NSG 3298** State Univ of New York - Stony Brook 3497  
Combustion theory for clouds of porous solids at reduced gravitational conditions

Period	Obligations
10/01/79-09/30/80	FY81 TOTAL \$40,000
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Berlad, A	LERC/Cochran, T N 13-Physics

**NSG 5250** State Univ of New York - Stony Brook 3498  
Ultraviolet observations of planets, satellites and comets  
International Ultraviolet Explorer

Period	Obligations
03/01/78-11/30/81	FY81 \$17,000 TOTAL \$58,993
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Caldwell, J	GSFC/Bogges, A 11-Astronomy
Owen, T	
Hardorp, J	

**NSG 7270** State Univ of New York - Stony Brook 3499  
Cells, embryos and development in space

Period	Obligations
09/01/76-10/31/81	FY81 \$80,000 TOTAL \$342,570
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Krikorian, A D	HQ-SB/Halstead, T W 51-Biological Sci

**NSG 7286** State Univ of New York - Stony Brook 3500  
Infrared spectroscopy of Jupiter and Saturn

Period	Obligations
09/01/76-05/31/82	FY81 \$29,876 TOTAL \$127,924
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Knacke, R F	HQ-SL/Brunk, W E 11-Astronomy
	HQ-SL/Murphy, R E

**NSG 7320** State Univ of New York - Stony Brook 3501  
Theoretical planetary physics

Period	Obligations
04/01/77-08/31/82	FY81 \$40,000 TOTAL \$149,910
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Caldwell, J J	HQ-SL/Brunk, W E 11-Astronomy
	HQ-SL/Murphy, R E

**NSG 7553** State Univ of New York - Stony Brook 3502  
Outer solar system nomenclature

Period	Obligations
04/01/79-03/31/82	FY81 \$10,088 TOTAL \$30,832
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Owen, T	HQ-SL/Boyce, J M 32-Geological Sci
	HQ-SL/Holt, H E

**NSG 9044** State Univ of New York - Stony Brook 3503  
Petrologic and stratigraphic studies of lunar drill cores and drive tubes

Period	Obligations
09/01/76-01/31/82	FY81 \$107,100 TOTAL \$514,215
<i>Prin Invest</i>	<i>NASA Tech Officer CASE Category</i>
Papike, J J	JSC/Warner, J L 13-Physics

**NASA'S UNIVERSITY PROGRAM**  
**NEW YORK (Continued)**

**NCA 2-765001** State Univ of New York - Upstate Med Ctr 3504  
 Isolation and characterization of post-hypoxic hemolytic factors in blood

Period	Obligations
06/01/80-05/31/82	FY81 \$25,005 TOTAL \$42,005
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Landaw, S A	ARC/Leon, H A 56-Medical Sciences

**NAG 5-113** State Univ of New York Col - Geneseo 3505  
 Simultaneous in-eclipse ultraviolet observations of early-type eclipsing

Period	Obligations
10/01/80-09/30/82	FY81 TOTAL \$1,120
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Meisel, D D	GSFC/Corrigan, J P 11-Astronomy

**NAG 1-131** State University of New York at Oneonta 3506  
 Transonic normal shock-laminar boundary layer interactions with suction

Period	Obligations
01/01/81-09/30/81	FY81 \$38,500 TOTAL \$38,500
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Ram, R B	LARC/Harvey, W D 41-Aero Engr

**NAS 5-25967** State University of New York at Oneonta 3507  
 Demonstration project to evaluate the utility of operational applications of LANDSAT to county and local government agencies

Period	Obligations
02/05/80-11/04/81	FY81 TOTAL \$13,057
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Baumann, P R	GSFC/Kerber, A G 39-Env Sci, NEC

**NSG 5077** State Univ of New York College - Purchase 3508  
 Spectral and Monte Carlo predictability studies

Period	Obligations
09/01/75-09/30/81	FY81 \$4,090 TOTAL \$107,375
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Tenenbaum, J	GSFC/Halem, M 31-Atmos Sci

**NAG 1-129** Syracuse University 3509  
 Aeroacoustics of a porous plug jet noise suppressor

Period	Obligations
01/01/81-12/31/81	FY81 \$43,000 TOTAL \$43,000
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Dosanjh, D	LARC/Seiner, J M 41-Aero Engr
	LARC/Liu, C H

**NAG 3-202** Syracuse University 3510  
 Optical records of supersonic coaxial jet flows and shock structure

Period	Obligations
07/27/81-01/26/82	FY81 \$20,000 TOTAL \$20,000
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Dosanjh, D S	MSFC/Stone, J R 41-Aero Engr

**NSG 1602** Syracuse University 3511  
 Advanced programmable image sensor/processor

Period	Obligations
03/15/79-10/14/81	FY81 TOTAL \$107,081
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Kowel, S T	LARC/Benz, H F 45-Elec Engr
Kornreich, P E	LARC/Breckenridge, R A

**NSG 1611** Syracuse University 3512  
 Surface Acoustic Waves (SAW)/silicon monolithic programmable sensor/processor

Period	Obligations
05/01/79-04/30/82	FY81 \$74,915 TOTAL \$224,372
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Kowel, S T	LARC/Segura, R 45-Elec Engr
Kornreich, P G	

**NAG 2-117** University of Rochester 3513  
 Development of an infrared CCD for use in astronomy

Period	Obligations
06/01/81-11/30/81	FY81 \$19,986 TOTAL \$19,986
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Forrest, W J	ARC/Goebel, J H 11-Astronomy
Pipher, J L	ARC/McCreight, C R

**NAG 5-46** University of Rochester 3514  
 Ultraviolet observations of the continua of nebulae and their exciting stars

Period	Obligations
05/01/80-04/30/82	FY81 \$21,552 TOTAL \$28,987
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Helfer, H L	GSFC/Bogges, A 11-Astronomy

**NAG 5-123** University of Rochester 3515  
 Spectra of degenerate stars of known mass

Period	Obligations
10/01/80-09/30/81	FY81 \$13,491 TOTAL \$13,491
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Savedoff, M P	GSFC/Bogges, A 11-Astronomy
Bohlin, R C	
Russell, J L	

**NSG 2343** University of Rochester 3516  
 Determination of a galactic gradient Measurements of the fine structure lines of ARII, and SIII in galactic HII regions

Period	Obligations
10/01/78-10/31/81	FY81 \$23,000 TOTAL \$78,346
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Pipher, J L	ARC/Haughney, L C 11-Astronomy
Helfer, H L	

**NSG 5354** University of Rochester 3517  
 Search for coronal features or circumstellar clouds around Sirius

Period	Obligations
06/01/79-11/30/80	FY81 TOTAL \$6,900
<i>Prnn Invest</i>	<i>NASA Tech Officer CASE Category</i>
Vanhorn, H M	GSFC/Kupperian, J E 11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**NEW YORK (Continued)**

NSG 7562	University of Rochester	3518
Basic research in sunspot dynamics		
<i>Period</i>	<i>Obligations</i>	
10/01/78-10/31/81	FY81 \$20,140	TOTAL \$58,140
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Thomas, J H	HQ-SC/Chipman, E G	13-Physics

<b>NSG 7454</b>	<b>York College</b>	<b>3519</b>
Irradiation effects on surface of Moon, Mercury, asteroids and solar system bodies		
<i>Period</i>	<i>Obligations</i>	
06/01/78-11/30/81	FY81:	TOTAL \$106,251
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Spergel, M S	HQ-LC/Pohly, J G	13-Physics

NSG 1647	Duke University	3524
Improvement of nonlinear transient analysis efficiency		
<i>Period</i>	<i>Obligations</i>	
09/01/79-09/30/81	FY81	TOTAL \$42,189
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Melosh, R J	LARC/Hayduk, R J	49-Engr, NEC
	LARC/Thomson, R G	

NSG 3157	Duke University	3525
Design feasibility of high-power lightweight DC-to-DC converters for space power applications		
<i>Period</i>	<i>Obligations</i>	
07/01/77-05/29/82	FY81 \$80,000	TOTAL \$384,660
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilson, T G	LERC/Kolecki, J C	45-Elec Engrg
	LERC/Myers, I F	

NSG 3160	Duke University	3526
Acceleration of convergence		
<i>Period</i>	<i>Obligations</i>	
06/01/77-05/29/82	FY81 \$15,568	TOTAL \$65,519
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, D A	LERC/Ford, W F	21-Mathematics

## NORTH CAROLINA

<b>NAG 1-70</b>	<b>Duke University</b>	<b>3520</b>
<b>Evaluation of computer-aided reliability estimation (CARE) III</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/80-06/30/82</b>	<b>FY81 \$38,491</b>	<b>TOTAL \$64,413</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Trivedi, K S</b>	<b>LARC/Bavuso, S J</b>	
<b>Geist, R M</b>	<b>LARC/Lupton, A O</b>	
<b>29-Math Computer Sci, NEC</b>		

NSG 7540	Duke University	3527
Millimeter and submillimeter spectroscopy of molecules of atmospheric importance		
<i>Period</i>	<i>Obligations</i>	
03/01/79-02/28/82	FY81 \$53,549	TOTAL \$145,843
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Delucia, F C	HQ-EB/Watson, R T	31-Atmos Sci
	HQ-EB/Chan, K R	

NAG 1-165	Duke University	3521
Study of tool for prediction and evaluation of performance of application software		
<i>Period</i>	<i>Obligations</i>	
04/01/81-03/31/82	FY81: \$59,527	TOTAL \$59,527
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, C V	LARC/Salley, G C	
		22-Computer Science

NAG 1-82		North Carolina A&T State University	3528
System compaction and integration-lasers			
<i>Period</i>		<i>Obligations</i>	
07/14/80-12/31/81	FY81	TOTAL	\$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Yu, C	LARC/Hoell, J M	19-Phys Sci, NEC	
	LARC/Brockman, P		

NAG 2-128	Duke University	3522
Cryogenic experiments on fluid helium under low gravity		
<i>Period</i>	<i>Obligations</i>	
08/01/81-03/31/82	FY81 \$19,700	TOTAL \$19,700
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meyer, H	LARC/Brooks, W F	13-Physics
	LARC/Kittel, P	

NCC 1-37		North Carolina A&T State University	3529
Dynamic analysis of the solar electric propulsion (SEP) solar array and Space Shuttle			
<i>Period</i>		<i>Obligations</i>	
09/01/80-09/30/81	FY81	TOTAL	\$22,445
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Abu-saba, E G	LARC/Montgomery, R C	44-Civil Engr	

<b>NAGW 189</b>	<b>Duke University</b>	<b>3523</b>
<b>Millimeter and submillimeter wave spectroscopic laboratory studies of interstellar molecule</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/81-05/30/82</b>	<b>FY81 \$49,969</b>	<b>TOTAL \$49,969</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Herbst, E</b>	<b>HQ-SC/Bogges, N W</b>	<b>11-Astronomy</b>
	<b>HQ-SC/Weiler, E J</b>	

NGT 34-012-800		North Carolina A&T State University	3530
Summer faculty fellowship program in engineering systems design			
<i>Period</i>		<i>Obligations</i>	
01/01/80-12/31/81	FY81	TOTAL	\$205,817
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Abu-saba, E G	HQ-LC/Carter, C H	49-Engr, NEC	

**NASA'S UNIVERSITY PROGRAM**  
**NORTH CAROLINA (Continued)**

**NSG 1390**      **North Carolina A&T State University**      **3531**  
Material growth and characterization of III-V compounds for solid state devices

<i>Period</i>	<i>Obligations</i>	
02/01/77-05/15/82	FY81 \$150,000	TOTAL \$750,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stefanakos, E	LARC/Magee, C J	45-Elec Engr
Abul-eadl, A	LARC/Hendricks, H D	

**NSG 1516**      **North Carolina A&T State University**      **3532**  
Patterns of residual stresses within complex welded steel structures

<i>Period</i>	<i>Obligations</i>	
04/15/78-05/14/82	FY81 \$21,953	TOTAL \$89,043
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Botros, B M	LARC/Buckley, J D	47-Materials Engr

**NSG 1631**      **North Carolina A&T State University**      **3533**  
Design and testing of small composite specimens

<i>Period</i>	<i>Obligations</i>	
08/17/79-06/30/81	FY81	TOTAL \$35,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sharma, A V	LARC/Rhodes, M D	44-Civil Engr
	LARC/Mikulas, M M	

**NSG 5406**      **North Carolina A&T State University**      **3534**  
Two dimensional recursive digital filters for new real time image processing

<i>Period</i>	<i>Obligations</i>	
09/13/79-12/31/80	FY81	TOTAL \$53,743
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Alexander, W E	GSFC/Ramapriyan, H K	
Olson, D E		21-Mathematics

**NAG 1-187**      **North Carolina Central University**      **3535**  
Laser heterodyne spectroscopy of stratospheric gases

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$66,320	TOTAL \$66,320
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dutta, J M	LARC/Katzberg, S J	13-Physics
Jones, C R		

**NSG 5120**      **North Carolina Central University**      **3536**  
Optically pumped submillimeter waves and applications

<i>Period</i>	<i>Obligations</i>	
06/07/76-08/31/81	FY81	TOTAL \$196,821
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jones, C R	GSFC/McAvoy, N	13-Physics
Dutta, J M	GSFC/Lawandy, N	

**NAG 1-20**      **North Carolina State Univ - Raleigh**      **3537**  
Studies of image analysis

<i>Period</i>	<i>Obligations</i>	
02/01/80-12/31/81	FY81 \$25,598	TOTAL \$114,598
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Snyder, W E	LARC/Beng, H F	45-Elec Engr
Rajala, S A	LARC/Husson, C	

**NAG 1-29**      **North Carolina State Univ - Raleigh**      **3538**  
Trailing-edge flows and their influence on airfoil noise

<i>Period</i>	<i>Obligations</i>	
01/15/80-04/30/81	FY81	TOTAL \$20,000
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hodgson, T H	LARC/Yu, J C	13-Physics

**NAG 1-103**      **North Carolina State Univ - Raleigh**      **3539**  
Shape preserving approximation with application to computer aided geometric design

<i>Period</i>	<i>Obligations</i>	
10/01/80-07/15/82	FY81 \$20,000	TOTAL \$47,340
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McAllister, D F	LARC/Speray, D E	
	LARC/Park, S K	29-Math Computer Sci, NEC

**NAG 1-194**      **North Carolina State Univ - Raleigh**      **3540**  
Investigation of fault-handling capabilities and limitations of fault-tolerant computer architecture

<i>Period</i>	<i>Obligations</i>	
06/01/81-08/31/82	FY81 \$37,184	TOTAL \$37,184
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gault, J W	LARC/Lupton, A O	45-Elec Engr
	LARC/Palumbo, D L	

**NAG 3-89**      **North Carolina State Univ - Raleigh**      **3541**  
Boundary layer studies of model and full scale VTOL inlets in the diffusion limited flow regions

<i>Period</i>	<i>Obligations</i>	
09/01/80-01/31/82	FY81	TOTAL \$24,046
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Boles, M A	LERC/Huang, D	41-Aero Engr

**NAG 3-189**      **North Carolina State Univ - Raleigh**      **3542**  
The effects of supersonic jet screech tone reduction on broadband shock associated noise

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$53,604	TOTAL \$53,604
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nagel, R T	LERC/Stone, J R	41-Aero Engr

**NAS 5-26157**      **North Carolina State Univ - Raleigh**      **3543**  
Magnetic fields monitor satellite science investigation data and aeromagnetic data in the Eastern Piedmont of the United States

<i>Period</i>	<i>Obligations</i>	
05/01/80-03/01/82	FY81 \$17,742	TOTAL \$37,742
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Won, I J	GSFC/Oseroff, H	32-Geological Sci

**NAS 5-26510**      **North Carolina State Univ - Raleigh**      **3544**  
Photometric observations supporting sounding rockets 33 019 and 33 020

<i>Period</i>	<i>Obligations</i>	
03/06/81-12/09/81	FY81 \$5,530	TOTAL \$5,530
<i>Prnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Manring, E R	GSFC/Heppner, J P	31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM**  
**NORTH CAROLINA (Continued)**

**NAS 6-3018** North Carolina State Univ - Raleigh 3545  
 Perform statistical modelling of surface water movements using  
 radar altimeter data

Period	Obligations
07/01/79-07/31/82	FY81 \$21,000 TOTAL \$60,972
Pnn Invest	NASA Tech Officer CASE Category
Tung, C	WFC/Huang, N E 33-Oceanography
	WFC/Long, S R

**NCC 1-22** North Carolina State Univ - Raleigh 3546  
 Computational fluid mechanics

Period	Obligations
06/15/79-09/14/83	FY81 \$142,995 TOTAL \$334,924
Pnn Invest	NASA Tech Officer CASE Category
Hassan, H A	LARC/South, J C 41-Aero Engr
Dejarnette, F R	LARC/Salas, M D

**NCC 1-35** North Carolina State Univ - Raleigh 3547  
 Development of an aerodynamic heating computer program for  
 computer-aided design systems

Period	Obligations
02/15/80-08/14/81	FY81 TOTAL \$30,882
Pnn Invest	NASA Tech Officer CASE Category
Dejarnette, F R	LARC/Wurster, K E 41-Aero Engr
	LARC/Wilhite, A W

**NCC 1-46** North Carolina State Univ - Raleigh 3548  
 Investigation of the aerodynamic characteristics leading edge  
 vortex flaps

Period	Obligations
09/18/80-01/02/82	FY81 TOTAL \$33,275
Pnn Invest	NASA Tech Officer CASE Category
Dejarnette, F R	LARC/Campbell, J F 41-Aero Engr
Tingas, S A	

**NCC 1-49** North Carolina State Univ - Raleigh 3549  
 Development of a surface fitting program for computer-aided  
 design systems

Period	Obligations
02/01/81-01/31/82	FY81 \$34,779 TOTAL \$34,779
Pnn Invest	NASA Tech Officer CASE Category
Perkins, J N	LARC/Wilhite, A W 21-Mathematics
	LARC/Wurster, K E

**NCC 1-54** North Carolina State Univ - Raleigh 3550  
 Kinetics of direct solar pumped lasers

Period	Obligations
07/01/81-06/30/82	FY81 \$30,000 TOTAL \$30,000
Pnn Invest	NASA Tech Officer CASE Category
Hassan, H A	LARC/Meador, W E 13-Physics
	LARC/Conway, E J

**NCC 2-101** North Carolina State Univ - Raleigh 3551  
 Plant growth in controlled environments in response to characteris-  
 tics of nutrient solutions

Period	Obligations
01/01/81-12/31/81	FY81 \$44,757 TOTAL \$44,757
Pnn Invest	NASA Tech Officer CASE Category
Raper, C D	ARC/Zill, L P 55-Agriculture Sci

**NSG 1353** North Carolina State Univ - Raleigh 3552  
 Pattern classifiers using charge transfer devices applications

Period	Obligations
11/22/76-01/31/80	FY81 TOTAL \$110,030
Pnn Invest	NASA Tech Officer CASE Category
Snyder, W E	LARC/Benz, H F 45-Elec Engr
	LARC/Husson, C

**NSG 1355** North Carolina State Univ - Raleigh 3553  
 A study of real-time computer graphic display technology for  
 aeronautical applications

Period	Obligations
01/01/77-06/30/82	FY81 \$32,225 TOTAL \$117,023
Pnn Invest	NASA Tech Officer CASE Category
Rajala, S A	LARC/Batson, V M 45-Elec Engr
	LARC/Hatfield, J J

**NSG 1377** North Carolina State Univ - Raleigh 3554  
 Investigation of flow noise from streamlined and blunt bodies  
 trailing edge effects

Period	Obligations
01/01/77-04/30/80	FY81 TOTAL \$117,000
Pnn Invest	NASA Tech Officer CASE Category
Hodgson, T H	LARC/Brooks, T F 41-Aero Engr
	LARC/Preisser, J S

**NSG 1562** North Carolina State Univ - Raleigh 3555  
 Study of the effects of high energy radiation on the mechanical  
 properties of graphite-fiber reinforced epoxy resins

Period	Obligations
10/01/78-12/31/81	FY81 TOTAL \$141,291
Pnn Invest	NASA Tech Officer CASE Category
Fornes, R E	LARC/Long, E R, Jr 13-Physics
Memory, J D	

**NSG 1584** North Carolina State Univ - Raleigh 3556  
 Optimum nacelle shapes and flow port locations for minimum  
 drag and effective engine cooling for general aviation aircraft

Period	Obligations
01/01/79-12/31/81	FY81 \$60,100 TOTAL \$166,358
Pnn Invest	NASA Tech Officer CASE Category
Smetana, F O	LARC/Holbrook, G T 41-Aero Engr
	LARC/Holmes, B J

**NSG 1588** North Carolina State Univ - Raleigh 3557  
 Large reflector antenna analysis research

Period	Obligations
01/01/79-12/31/81	FY81 \$47,875 TOTAL \$117,558
Pnn Invest	NASA Tech Officer CASE Category
Kauffman, J F	LARC/Bailey, M C 45-Elec Engr



# NASA'S UNIVERSITY PROGRAM NORTH CAROLINA (Continued)

**NSG 4025** North Carolina State Univ - Raleigh 3558  
An investigation to improve the performance of a technique to identify lift, drag and power simultaneously from flight test data

Period	Obligations	
07/23/79-07/22/80	FY81	TOTAL \$47,804
Prin Invest	NASA Tech Officer	CASE Category
Smetana, F O	DFRC/Kurtenbach, F J	41-Aero Engr
	DFRC/Illiff, K W	

**NAG 1-181** University of North Carolina - Chapel Hill 3559  
Biogeochemistry of methane production in wetland soils

Period	Obligations	
05/01/81-04/30/82	FY81 \$16,700	TOTAL \$16,700
Prin Invest	NASA Tech Officer	CASE Category
Martens, C S	LARC/Harriss, R C	39-Env Sci, NEC
	LARC/Sebacher, D I	

**NAGW 96** Wake Forest University 3560  
A study of the mechanism of thermomorphogenesis in plants

Period	Obligations	
08/01/80-07/31/82	FY81 \$55,694	TOTAL \$92,194
Prin Invest	NASA Tech Officer	CASE Category
Jaffe, M J	HQ-SB/Halstead, T W	51-Biological Sci

**NAS 2-10523** Wake Forest University 3561  
Life science experiment ARC 781-127, correlation macro and microcirculatory alterations during weightlessness

Period	Obligations	
01/17/80-09/30/81	FY81	TOTAL \$10,447
Prin Invest	NASA Tech Officer	CASE Category
Hutchins, P M	ARC/Ferandin, J	51-Biological Sci
	ARC/Lee, R C	

**NCC 1-55** Wake Forest University 3562  
Quantum chemical study of methane oxidation species

Period	Obligations	
06/04/81-06/03/84	FY81 \$46,112	TOTAL \$46,112
Prin Invest	NASA Tech Officer	CASE Category
Jackels, C F	LARC/Phillips, D H	12-Chemistry
	LARC/Rogowski, R S	

## NORTH DAKOTA

**NAGW 151** University of North Dakota 3563  
Photogeologic mapping of the Galilean satellite Io

Period	Obligations	
12/15/80-12/14/81	FY81 \$12,573	TOTAL \$12,573
Prin Invest	NASA Tech Officer	CASE Category
Karner, F R	HQ-SL/Boyce, J L	32-Geological Sci

## OHIO

**NAG 5-64** Bowling Green State University 3564  
Investigation of emission line profiles in type I Seyfert galaxies

Period	Obligations	
06/01/80-05/31/81	FY81	TOTAL \$1,370
Prin Invest	NASA Tech Officer	CASE Category
Gregory, S	GSFC/Boggess, A	11-Astronomy
Ptak, R L		
Stoner, R E		

**NAG 2-82** Case Western Reserve University 3565  
Stabilizability and eigenvalue structure for linear systems representing the dynamics of twin-lift helicopter system

Period	Obligations	
01/01/81-09/30/81	FY81 \$25,000	TOTAL \$25,000
Prin Invest	NASA Tech Officer	CASE Category
Martin, C	ARC/Meyer, G	49-Engr, NEC

**NAG 3-2** Case Western Reserve University 3566  
Improved and efficient laser anemometers

Period	Obligations	
11/01/79-10/30/81	FY81 \$66,514	TOTAL \$116,847
Prin Invest	NASA Tech Officer	CASE Category
Edwards, R V	LERC/Seasholtz, R G	49-Engr, NEC

**NAG 3-12** Case Western Reserve University 3567  
Dissolution transfer casting of biopolymers

Period	Obligations	
11/16/79-11/17/80	FY81	TOTAL \$30,119
Prin Invest	NASA Tech Officer	CASE Category
Gibbons, D F	LERC/Weigand, A J	
Picha, G J		56-Medical Sciences

**NAG 3-24** Case Western Reserve University 3568  
Diamond II a resistivity, dielectric constant, and tangent delta from 10GHz-100GHz as well as thermal conductivity from 0 C to 500 C

Period	Obligations	
01/07/80-01/05/82	FY81 \$60,000	TOTAL \$110,000
Prin Invest	NASA Tech Officer	CASE Category
Hazon, D	LERC/Kosmahl, H G	13-Physics
	LERC/Kavanagh, F	

**NAG 3-30** Case Western Reserve University 3569  
Influence of cobalt on the microstructure and mechanical properties of mar M-247

Period	Obligations	
01/28/80-01/27/83	FY81	TOTAL \$59,991
Prin Invest	NASA Tech Officer	CASE Category
Ebert, L J	LERC/Gray, H R	47-Materials Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-39** Case Western Reserve University 3570  
 Constitutive equations for analysis and design of turbine engine hot section components

Period	Obligations	
04/01/80-03/30/82	FY81 \$49,998	TOTAL \$94,910
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Manson, S S	LERC/Thompson, R L	
Mendelson, A		47-Materials Engr

**NAG 3-46** Case Western Reserve University 3571  
 Crack initiation and early propagation under thermo-mechanical loading

Period	Obligations	
03/15/80-03/29/82	FY81 \$49,995	TOTAL \$97,123
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Manson, S S	LERC/Halford, G R	47-Materials Engr
	LERC/Hirschberg, M H	

**NAG 3-49** Case Western Reserve University 3572  
 Stress generation in thermally grown oxide scales

Period	Obligations	
03/25/80-03/24/81	FY81	TOTAL \$12,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ebert, L J	LERC/Smialek, J L	47-Materials Engr

**NAG 3-58** Case Western Reserve University 3573  
 Evolution and adherence of oxide films formed on nial and nical alloys

Period	Obligations	
06/15/80-06/14/83	FY81	TOTAL \$59,940
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ebert, L J	LERC/Smialek, J L	47-Materials Engr

**NAG 3-61** Case Western Reserve University 3574  
 Model development for shock wave boundary layer interaction experiment

Period	Obligations	
04/24/80-04/22/82	FY81 \$36,500	TOTAL \$57,700
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greber, I	LERC/Hingst, W R	41-Aero Engr

**NAG 3-66** Case Western Reserve University 3575  
 Electrochemical fluorination of polymeric materials for high energy density aqueous and non-aqueous battery and fuel cell

Period	Obligations	
05/28/80-05/26/82	FY81 \$67,857	TOTAL \$137,322
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Liu, C C	LERC/Hsu, L C	43-Chem Engr
	LERC/Sanabria, O D	

**NAG 3-80** Case Western Reserve University 3576  
 Planar multijunction high voltage solar cells

Period	Obligations	
06/02/80-06/30/82	FY81 \$63,000	TOTAL \$83,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kapoor, V. J	LERC/Evans, J C	13-Physics
Ko, W H	LERC/Chai, A T	

**NAG 3-97** Case Western Reserve University 3577  
 Mass and heat transfer characteristics of melt metals

Period	Obligations	
09/08/80-09/06/82	FY81 \$47,150	TOTAL \$94,180
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dybbbs, A	LERC/Liebert, C H	46-Mech Engr
	LERC/Ludwig, L P	

**NAG 3-98** Case Western Reserve University 3578  
 Application of photoacoustic techniques to the study of jet fuel residue

Period	Obligations	
09/22/80-09/20/82	FY81 \$107,986	TOTAL \$107,986
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Claspy, P C	LERC/Seng, G T	12-Chemistry

**NAG 3-101** Case Western Reserve University 3579  
 Computer program to minimize three-dimensional flight time tracks

Period	Obligations	
09/15/80-08/12/81	FY81 \$14,800	TOTAL \$19,600
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Parke, F I	LERC/Steinberg, R	29-Math Computer Sci, NEC

**NAG 3-102** Case Western Reserve University 3580  
 Experiments on viscous flows on supersonic streams in X1 Lewis supersonic wind tunnel

Period	Obligations	
09/15/80-03/15/82	FY81	TOTAL \$30,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greber, I	LERC/Hingst, W R	41-Aero Engr

**NAG 3-115** Case Western Reserve University 3581  
 Effect of morphological and mechanical parameters of ion sputters materials on the gingival seal of an oral implant model

Period	Obligations	
11/01/80-10/30/82	FY81	TOTAL \$50,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hottel, T	LERC/Kerslake, W R	56-Medical Sciences

**NAG 3-126** Case Western Reserve University 3582  
 Thermal degradation of pressure modulator radiometer polyimide

Period	Obligations	
01/15/81-01/14/82	FY81 \$40,696	TOTAL \$40,696
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ishida, H	LERC/Lauver, R M	12-Chemistry
Koenig, J L		

**NAG 3-140** Case Western Reserve University 3583  
 Interactive calculation procedures for mixed compression inlets

Period	Obligations	
11/27/80-11/07/81	FY81 \$56,520	TOTAL \$56,520
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reshotko, E	LERC/Bishop, A R	41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 3-158** Case Western Reserve University **3584**  
 Relating NMR parameters to polymer mechanical properties  
*Period Obligations*  
 02/25/81-02/24/82 FY81 \$39,828 TOTAL \$39,828  
*Prin Invest NASA Tech Officer CASE Category*  
 Ritchey, W M LERC/Lauver, R W 12-Chemistry  
 LERC/Serafini, T T

**NAG 3-163** Case Western Reserve University **3585**  
 Developments of pressure modulator radiometer monomers and polymers Improving performance of pressure modulator radiometer systems  
*Period Obligations*  
 03/03/81-03/02/82 FY81 \$34,960 TOTAL \$34,960  
*Prin Invest NASA Tech Officer CASE Category*  
 Ritchey, W M LERC/Serafini, T T 47-Materials Engr  
 Sukenik, C N

**NAG 3-171** Case Western Reserve University **3586**  
 Research on jet entrainment  
*Period Obligations*  
 04/04/81-04/03/82 FY81 \$47,390 TOTAL \$47,390  
*Prin Invest NASA Tech Officer CASE Category*  
 Greber, I LERC/Riddlerough, S M 41-Aero Engr

**NAG 3-187** Case Western Reserve University **3587**  
 Super Schottky mixer and detectors in beam lead technology  
*Period Obligations*  
 06/01/81-05/31/82 FY81 \$49,516 TOTAL \$49,516  
*Prin Invest NASA Tech Officer CASE Category*  
 Pyee, M M LERC/Haugland, E H 45-Elec Engr  
 Thompson, E D LERC/Connolly, D J

**NAG 3-191** Case Western Reserve University **3588**  
 Growth of diamond-like carbon films for electronic application  
*Period Obligations*  
 06/22/81-06/21/82 FY81 \$74,232 TOTAL \$74,232  
*Prin Invest NASA Tech Officer CASE Category*  
 Angus, J C LERC/Riley, T J 43-Chem Engr  
 Mann, J A LERC/Myers, I T

**NAG 3-217** Case Western Reserve University **3589**  
 Vapor phase diamond growth technology Rheed analysis  
*Period Obligations*  
 10/15/81-10/14/82 FY81 \$25,912 TOTAL \$25,912  
*Prin Invest NASA Tech Officer CASE Category*  
 Mann, J LARC/Kolecki, J C 13-Physics  
 Guda, L LARC/Banks, B A

**NAG 3-225** Case Western Reserve University **3590**  
 Study of fast wave electron beam devices for millimeter wave generation  
*Period Obligations*  
 10/20/81-10/19/82 FY81 \$32,485 TOTAL \$32,485  
*Prin Invest NASA Tech Officer CASE Category*  
 Ferendeci, A M LERC/Heighway, J E 45-Elec Engr  
 LERC/Dayton, J A

**NAG 5-179** Case Western Reserve University **3591**  
 Luminous, extended atmosphere stars in the Magellanic clouds  
*Period Obligations*  
 05/15/81-05/14/82 FY81 \$5,000 TOTAL \$5,000  
*Prin Invest NASA Tech Officer CASE Category*  
 Shore, S N GSFC/Bogges, A 11-Astronomy

**NAGW 83** Case Western Reserve University **3592**  
 Prenatal and postnatal development and functional differentiation of the vestibular system in normal, rotated and centrifuged rats and mice  
*Period Obligations*  
 07/01/80-06/30/82 FY81 \$36,996 TOTAL \$71,196  
*Prin Invest NASA Tech Officer CASE Category*  
 Keefe, J R HQ-SB/Halstead, T W 51-Biological Sci

**NAS 3-21046** Case Western Reserve University **3593**  
 Spacelab experiment on surface tension driven convection  
*Period Obligations*  
 09/16/77-12/31/79 FY81 TOTAL \$97,730  
*Prin Invest NASA Tech Officer CASE Category*  
 Ostrack, S LERC/Labus, T M 46-Mech Engr

**NAS 3-21946** Case Western Reserve University **3594**  
 Determination of fatigue characteristics of ion beam textured orthopedic implant alloy MP35N in a physiological solution  
*Period Obligations*  
 06/11/79-07/30/80 FY81 TOTAL \$14,622  
*Prin Invest NASA Tech Officer CASE Category*  
 Bahniuk, E LERC/Wintucky, E G 49-Engr, NEC

**NAS 3-22259** Case Western Reserve University **3595**  
 Biomedical application of ion thruster technology  
*Period Obligations*  
 09/25/79-10/15/80 FY81 TOTAL \$23,100  
*Prin Invest NASA Tech Officer CASE Category*  
 Gibbons, D F LERC/Weigand, A J 19-Phys Sci, NEC

**NAS 3-22342** Case Western Reserve University **3596**  
 Design, fabricate and test prime focus feeds for parabolic Earth station antennas for the 12 GHz broadcast satellite service  
*Period Obligations*  
 04/01/80-09/30/82 FY81 TOTAL \$51,023  
*Prin Invest NASA Tech Officer CASE Category*  
 Collins, R E LERC/Smetana, J 19-Phys Sci, NEC

**NAS 3-22443** Case Western Reserve University **3597**  
 Center of excellence for biomedical application of ion thruster technology  
*Period Obligations*  
 07/17/80-03/02/82 FY81 TOTAL \$148,414  
*Prin Invest NASA Tech Officer CASE Category*  
 Gibbons, D F LERC/Weigand, A J  
 LERC/Banks, B A 56-Medical Sciences

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAS 3-22549** Case Western Reserve University 3598  
Developing a technique for translating the electron diffraction  
image of a phosphor screen to computer language  
*Period Obligations*  
11/14/80-11/14/81 FY81 \$21,634 TOTAL \$21,634  
*Pnn Invest NASA Tech Officer CASE Category*  
Mann, J A LERC/Riley, T J 49-Engr, NEC

**NAS 8-33015** Case Western Reserve University 3599  
Surface tension driven convection phenomena experiment  
*Period Obligations*  
05/23/78-08/07/81 FY81 \$121,399 TOTAL \$561,643  
*Pnn Invest NASA Tech Officer CASE Category*  
Ostrach, S MSFC/Schaefer, D A 13-Physics  
Mann, J A , Jr MSFC/Zwiener, J M

**NASW 3404** Case Western Reserve University 3600  
Development of a high resolution gamma ray telescope  
*Period Obligations*  
01/01/80-12/31/81 FY81 \$87,473 TOTAL \$205,820  
*Pnn Invest NASA Tech Officer CASE Category*  
Frye, G HQ-SC/Kaluzienski, L J 11-Astronomy  
HQ-SC/Holt, S S

**NCC 3-4** Case Western Reserve University 3601  
Interactive flow-field calculations in turbomachinery  
*Period Obligations*  
08/01/79-01/30/82 FY81 \$40,162 TOTAL \$75,804  
*Pnn Invest NASA Tech Officer CASE Category*  
Reshotko, E LERC/Sockol, P M 41-Aero Engr

**NCC 3-8** Case Western Reserve University 3602  
Microprocessor control of a wind turbine  
*Period Obligations*  
04/15/80-04/13/82 FY81 \$100,960 TOTAL \$230,050  
*Pnn Invest NASA Tech Officer CASE Category*  
Dybbs, A LERC/Finnegan, P M 49-Engr, NEC  
Bradshaw, F T LERC/Nyland, T W

**NGR 36-027-064** Case Western Reserve University 3603  
Study of effects of layer control on shock wave turbulent boundary  
layer interactions in supersonics inlets  
*Period Obligations*  
08/01/73-10/29/80 FY81 TOTAL \$256,738  
*Pnn Invest NASA Tech Officer CASE Category*  
Reshotko, E LERC/Bishop, A R 41-Aero Engr

**NGT 36-027-011** Case Western Reserve University 3604  
Summer program of NASA-ASEE summer faculty fellowships  
*Period Obligations*  
12/16/69-03/31/82 FY81 \$225,150 TOTAL \$1,672,243  
*Pnn Invest NASA Tech Officer CASE Category*  
Prahl, J M HQ-LC/Carter, C H 49-Engr, NEC

**NSG 2384** Case Western Reserve University 3605  
Prediction of system invariants in the presence of failure  
*Period Obligations*  
06/01/79-06/30/82 FY81 \$33,496 TOTAL \$93,746  
*Pnn Invest NASA Tech Officer CASE Category*  
Martin, C F ARC/Doolin, B F 49-Engr, NEC

**NSG 3040** Case Western Reserve University 3606  
Heat transfer characteristics of porous materials  
*Period Obligations*  
10/01/74-11/29/81 FY81 \$40,000 TOTAL \$220,000  
*Pnn Invest NASA Tech Officer CASE Category*  
Dybbs, A LERC/Aukerman, C A 47-Materials Engr

**NSG 3085** Case Western Reserve University 3607  
Demonstration experiment on utilization of buffer memory system  
for transmission of color video using moderate bandwidth  
communications satellite channels  
*Period Obligations*  
10/23/75-11/18/81 FY81 \$51,335 TOTAL \$623,845  
*Pnn Invest NASA Tech Officer CASE Category*  
Claspy, P C LERC/Stevens, G H 45-Elec Engr  
Merat, F L

**NSG 3151** Case Western Reserve University 3608  
The evaluation of surface texturing, by ion beam sputtering, on  
the mechanical fixation and biological compatibility of orthopedic  
alloys in bone  
*Period Obligations*  
05/01/77-01/31/82 FY81 TOTAL \$28,569  
*Pnn Invest NASA Tech Officer CASE Category*  
Gibbons, D F LERC/Kerslake, W R 56-Medical Sciences

**NSG 3197** Case Western Reserve University 3609  
Secondary electron emission yield  
*Period Obligations*  
07/01/78-06/28/82 FY81 \$49,980 TOTAL \$198,197  
*Pnn Invest NASA Tech Officer CASE Category*  
Gordan, W L LERC/Purvis, C K 13-Physics  
Hoffman, R W LERC/Stevens, N J

**NSG 3206** Case Western Reserve University 3610  
Experiments on jet mixing in compact reverse flow combustor  
configurations  
*Period Obligations*  
07/01/78-06/30/81 FY81 TOTAL \$67,850  
*Pnn Invest NASA Tech Officer CASE Category*  
Greber, I LERC/Riddlebaugh, S M 41-Aero Engr

**NSG 3207** Case Western Reserve University 3611  
Shaded computer graphic techniques for visualizing and inter-  
pretating analytic fluid flow models  
*Period Obligations*  
07/01/78-09/30/81 FY81 TOTAL \$53,000  
*Pnn Invest NASA Tech Officer CASE Category*  
Parke, F I LERC/Anderson, B H 41-Aero Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NSG 3211 Case Western Reserve University 3612**  
 Experimental investigation of shock-wave-boundary layer interaction  
*Period Obligations*  
 06/01/78-05/30/81 FY81 TOTAL \$58,690  
*Pnn Invest NASA Tech Officer CASE Category*  
 Greber, I LERC/Hingst, W R 41-Aero Engr

**NSG 3221 Case Western Reserve University 3613**  
 Convection in crystal growth and G-jitter  
*Period Obligations*  
 09/01/78-04/29/82 FY81 \$55,000 TOTAL \$155,000  
*Pnn Invest NASA Tech Officer CASE Category*  
 Ostrach, S LERC/Sarsfield, L P 13-Physics

**NSG 3230 Case Western Reserve University 3614**  
 Modeling of transient operations of monolith catalytic combustors  
*Period Obligations*  
 11/01/78-12/31/80 FY81 TOTAL \$69,000  
*Pnn Invest NASA Tech Officer CASE Category*  
 T'ien, J S LERC/Anderson, D N 46-Mech Engr

**NSG 3241 Case Western Reserve University 3615**  
 Characterization of structure of a polymer with a magnetic resonance spectroscopy  
*Period Obligations*  
 12/01/78-12/01/80 FY81 TOTAL \$46,244  
*Pnn Invest NASA Tech Officer CASE Category*  
 Ritchey, W LERC/Lauver, R 12-Chemistry

**NSG 3246 Case Western Reserve University 3616**  
 Anisotropy of directionally solidified nickel base superalloy monocrystals  
*Period Obligations*  
 06/15/79-06/15/82 FY81 TOTAL \$49,935  
*Pnn Invest NASA Tech Officer CASE Category*  
 Erert, L J LERC/Scheuermann, C M 47-Materials Engr

**NSG 3251 Case Western Reserve University 3617**  
 Use of the method of lines in fracture mechanics analyses with application to curved crack fronts  
*Period Obligations*  
 03/01/79-03/01/82 FY81 \$45,767 TOTAL \$122,864  
*Pnn Invest NASA Tech Officer CASE Category*  
 Mendelson, A LERC/Brown, W F, Jr 46-Mech Engr

**NSG 3252 Case Western Reserve University 3618**  
 Microstructure and mechanical properties of bulk and plasma-sprayed Y2O3 partially stabilized zirconia  
*Period Obligations*  
 04/02/79-06/30/81 FY81 TOTAL \$62,980  
*Pnn Invest NASA Tech Officer CASE Category*  
 Ebert, L J LERC/Gedwill, M A 47-Materials Engr  
 LERC/Levine, S R

**NSG 3271 Case Western Reserve University 3619**  
 Model development for shock wave boundary layer interaction experiments  
*Period Obligations*  
 04/24/79-01/31/81 FY81 TOTAL \$32,110  
*Pnn Invest NASA Tech Officer CASE Category*  
 Greber, I LERC/Hingst, W R 41-Aero Engr

**NSG 3272 Case Western Reserve University 3620**  
 Molecular mechanism of thermal degradation of polyimide resins  
*Period Obligations*  
 05/07/79-05/07/80 FY81 TOTAL \$14,642  
*Pnn Invest NASA Tech Officer CASE Category*  
 Ishida, H LERC/Lauver, R W 12-Chemistry  
 Koenig, J L

**NSG 3276 Case Western Reserve University 3621**  
 Three-dimensional bispectra and the mean rate of transfer of energy in turbulence  
*Period Obligations*  
 05/15/79-09/30/81 FY81 TOTAL \$89,925  
*Pnn Invest NASA Tech Officer CASE Category*  
 Koenig, J L LERC/Hsu, L C 12-Chemistry  
 LERC/Philipp, W H

**NSG 3279 Case Western Reserve University 3622**  
 Thermal fatigue behavior of dies for aluminum die casting after deposition of various ion sputtered coatings  
*Period Obligations*  
 06/01/79-02/28/81 FY81 TOTAL \$12,000  
*Pnn Invest NASA Tech Officer CASE Category*  
 Wallace, J F LERC/Mirtich, M J 19-Phys Sci, NEC

**NSG 3282 Case Western Reserve University 3623**  
 The influence of surface morphology modification by ion beam sputtering on the tissue response to percutaneous implants, of various compositions  
*Period Obligations*  
 06/01/79-10/01/80 FY81 TOTAL \$19,579  
*Pnn Invest NASA Tech Officer CASE Category*  
 Gibbons, D F LERC/Wiegand, A J 56-Medical Sciences

**NSG 3288 Case Western Reserve University 3624**  
 Optical studies of lubrication and transfer films for prosthetic devices  
*Period Obligations*  
 07/01/79-04/30/81 FY81 TOTAL \$20,000  
*Pnn Invest NASA Tech Officer CASE Category*  
 Cahan, B D LERC/Jones, W R 12-Chemistry

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NSG 3291** Case Western Reserve University **3625**  
Self-diffusion of oxygen and aluminum in doped alumina  
*Period Obligations*  
09/01/79-08/29/82 FY81 \$35,040 TOTAL \$102,981  
*Prin Invest NASA Tech Officer CASE Category*  
Halloran, J W LERC/Smialek, J L 47-Materials Engr  
Cooper, A R

**NSG 7035** Case Western Reserve University **3626**  
Development of a generalized technology for life prediction in the high-temperature creep and fatigue range  
*Period Obligations*  
05/01/74-05/01/80 FY81 TOTAL \$218,269  
*Prin Invest NASA Tech Officer CASE Category*  
Powell, N L LERC/Hirschberg, M H  
LERC/Halford, G R 47-Materials Engr

**NAG 3-23** Cleveland State University **3627**  
Theory and design of the tandem junction solar cell with front and back collection  
*Period Obligations*  
01/15/80-07/13/81 FY81 TOTAL \$14,087  
*Prin Invest NASA Tech Officer CASE Category*  
Goradia, C LERC/Baraona, C R 13-Physics

**NAG 3-84** Cleveland State University **3628**  
Development of optimization techniques for control of vehicle stored energy and optimization of hybrid vehicle propulsion section  
*Period Obligations*  
06/16/80-12/16/81 FY81 TOTAL \$99,138  
*Prin Invest NASA Tech Officer CASE Category*  
Donoghue, J F LERC/Stenger, F J 49-Engr, NEC  
Burgart, J H

**NAG 3-106** Cleveland State University **3629**  
Effect of stress on ultrasonic pulses in fiber reinforced composites  
*Period Obligations*  
10/01/80-06/15/82 FY81 TOTAL \$38,300  
*Prin Invest NASA Tech Officer CASE Category*  
Hemann, J H LERC/Nary, A 47-Materials Engr

**NAG 3-108** Cleveland State University **3630**  
High phase order induction motors  
*Period Obligations*  
09/29/80-11/28/81 FY81 TOTAL \$31,570  
*Prin Invest NASA Tech Officer CASE Category*  
Klingshirn, E A LERC/McBrien, E F 45-Elec Engr

**NAG 3-138** Cleveland State University **3631**  
NASA-Cleveland State University internship program  
*Period Obligations*  
12/15/80-06/11/82 FY81 \$22,264 TOTAL \$22,264  
*Prin Invest NASA Tech Officer CASE Category*  
Goradia, C LERC/Weinberg, I 13-Physics  
Goradia, M G LERC/Brandhurst, H W

**NAG 3-144** Cleveland State University **3632**  
Theory of high base resistivity BSF silicon solar cell  
*Period Obligations*  
12/22/80-12/21/81 FY81 \$21,474 TOTAL \$21,474  
*Prin Invest NASA Tech Officer CASE Category*  
Goradia, C LERC/Baraona, C R 13-Physics  
LERC/Weinberg, I W

**NAG 3-155** Cleveland State University **3633**  
Expansion of Presto computer code for off-design performance calculation of steam turbine generators  
*Period Obligations*  
02/10/81-02/09/82 FY81 \$68,313 TOTAL \$68,313  
*Prin Invest NASA Tech Officer CASE Category*  
Gorla, R S LERC/Choo, Y K 46-Mech Engr  
Larson, V H

**NAG 3-156** Cleveland State University **3634**  
Interference between analog and digital methods of modulation of television signals  
*Period Obligations*  
01/09/81-06/21/82 FY81 \$119,789 TOTAL \$119,789  
*Prin Invest NASA Tech Officer CASE Category*  
Groumpos, P P LERC/Miller, E F 45-Elec Engr  
LERC/Whyte, W A

**NAG 3-162** Cleveland State University **3635**  
Dynamic color graphics for interactive simulation and data analysis  
*Period Obligations*  
03/10/81-03/09/82 FY81 \$72,518 TOTAL \$72,518  
*Prin Invest NASA Tech Officer CASE Category*  
Heines, T S LERC/Leibbecki, H F  
29-Math Computer Sci, NEC

**NAG 3-169** Cleveland State University **3636**  
An investigation of the electrical characteristics of a rectenna element and a rectenna array  
*Period Obligations*  
03/30/81-06/29/82 FY81 \$25,575 TOTAL \$25,575  
*Prin Invest NASA Tech Officer CASE Category*  
Maisel, J E LERC/Trnner, J E 45-Elec Engr

**NAG 3-186** Cleveland State University **3637**  
Advancement of spur gear design technology  
*Period Obligations*  
05/28/81-05/27/82 FY81 \$54,982 TOTAL \$54,982  
*Prin Invest NASA Tech Officer CASE Category*  
Frater, J J LERC/Coy, J J 46-Mech Engr  
Kasuba, R

**NCC 3-3** Cleveland State University **3638**  
Graduate study program in unsteady heat transfer in turbomachinery  
*Period Obligations*  
09/29/79-09/30/82 FY81 TOTAL \$67,512  
*Prin Invest NASA Tech Officer CASE Category*  
Heiles, C E LERC/Wang, C R 46-Mech Engr  
LERC/Simoneau, R

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NCC 3-6** **Cleveland State University** **3639**  
Power train development/analysis large scale wind turbine  
supporting research and technology program  
*Period* *Obligations*  
02/15/80-03/29/82 **FY81 \$143,410** **TOTAL \$257,252**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Kasuba, R LERC/Savino, J M 46-Mech Engr  
Denngy, D L LERC/Finnegan, D

**NCC 3-16** **Cleveland State University** **3640**  
Experimental and analytical investigations of characteristics of  
stand alone solar photovoltaic energy systems and components  
*Period* *Obligations*  
10/13/80-10/12/81 **FY81 \$145,350** **TOTAL \$145,350**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Chang, G C LERC/Bozek, J M 45-Elec Engr  
Zachruski, R A LERC/Scudder, L R

**NCC 3-17** **Cleveland State University** **3641**  
Computerized mathematical model for optimizing cost and electric  
output of phosphoric acid fuel cells  
*Period* *Obligations*  
03/09/81-03/08/82 **FY81 \$49,980** **TOTAL \$49,980**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Alkasab, K A LERC/Presler, A F 46-Mech Engr  
Lu, C Y

**NSG 3155** **Cleveland State University** **3642**  
Dense silicon-nitride bodies without additives  
*Period* *Obligations*  
06/30/77-03/30/82 **FY81** **TOTAL \$44,850**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Yeh, H C LERC/Dutta, S 43-Chem Engr

**NSG 3257** **Cleveland State University** **3643**  
A study of dynamic energy equations  
*Period* *Obligations*  
03/15/79-07/31/82 **FY81 \$28,624** **TOTAL \$58,492**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Larson, V H LERC/Lorenzo, C F 46-Mech Engr

**NSG 3259** **Cleveland State University** **3644**  
Nitridation kinetics and reaction sintering of silicon nitride  
*Period* *Obligations*  
03/26/79-12/31/81 **FY81** **TOTAL \$51,119**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Yeh, H C LERC/Herbell, T P 47-Materials Engr

**NSG 3308** **Cleveland State University** **3645**  
Development of a data system for multi-channel spectrometers  
*Period* *Obligations*  
09/14/79-07/28/81 **FY81** **TOTAL \$52,395**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Megargle, R LERC/Gordon, W A 12-Chemistry

**NAG 5-165** **Kent State University** **3646**  
Classification of terrain complexity by autocorrelation  
*Period* *Obligations*  
04/15/81-04/14/82 **FY81 \$10,324** **TOTAL \$10,324**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Craig, R G GSFC/Labovitz, M L 32-Geological Sci

**NAS 3-21945** **Kent State University** **3647**  
Identification of new application for ion beam technology  
*Period* *Obligations*  
06/28/79-11/26/80 **FY81** **TOTAL \$38,018**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Gelerinter, E LERC/Wintucky, E 19-Phys Sci, NEC  
Spielberg, N

**NAS 5-26111** **Kent State University** **3648**  
Automated techniques for mapping urban land cover with remote  
sensing data  
*Period* *Obligations*  
03/31/80-07/31/81 **FY81** **TOTAL \$8,951**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Craig, R GSFC/Toll, D 32-Geological Sci

**NSG 2013** **Kent State University** **3649**  
Transport of trace contaminants through porous media  
*Period* *Obligations*  
03/15/74-12/31/81 **FY81** **TOTAL \$98,700**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Madey, R ARC/Quattrone, P D. 12-Chemistry

**NAS 9-14538** **Miami University** **3650**  
Research on a possible mechanism of O-G sickness  
*Period* *Obligations*  
02/15/75-04/30/82 **FY81 \$35,810** **TOTAL \$195,310**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Parker, D E JSC/Homick, J L 59-Life Sci, NEC  
JSC/Reschke, M F

**NAS 9-16049** **Miami University** **3651**  
Life science flight experiment  
*Period* *Obligations*  
01/17/80-01/31/82 **FY81** **TOTAL \$9,384**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Parker, D E JSC/Evans, J S 59-Life Sci, NEC

**NAS 9-16051** **Miami University** **3652**  
Motion perceptions evoked by oscillating linear accelerator on  
Earth and in zero-gravity  
*Period* *Obligations*  
01/17/80-10/01/82 **FY81** **TOTAL \$27,109**  
*Prnn Invest* *NASA Tech Officer* *CASE Category*  
Parker, D E JSC/Evans, J S 59-Life Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NCC 1-12** **Miami University** **3653**  
Basic research on radiation induced lasers  
*Period* *Obligations*  
05/15/79-11/31/81 **FY81** **TOTAL \$141,356**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wells, W E LARC/Deyoung, R J 13-Physics  
LARC/Conway, E J

**NAG 3-79** **Muskingum College** **3654**  
Chemically modified electrodes  
*Period* *Obligations*  
06/09/80-01/08/82 **FY81** **TOTAL \$15,467**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wallace, W J LERC/Charleston, L J 12-Chemistry

**NSG 3278** **Muskingum College** **3655**  
Chemically modified electrodes  
*Period* *Obligations*  
06/11/79-05/31/80 **FY81** **TOTAL \$7,100**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wallace, W J LERC/Charleston, L J 12-Chemistry

**NAG 2-34** **Ohio State University** **3656**  
Zero modules and inverse system design  
*Period* *Obligations*  
04/01/80-06/30/82 **FY81 \$15,027** **TOTAL \$31,756**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wyman, B ARC/Doolin, B F 49-Engr, NEC

**NAG 2-112** **Ohio State University** **3657**  
Use of computer aided testing in the investigation of pilot response to critical in flight events  
*Period* *Obligations*  
04/01/81-10/31/81 **FY81 \$56,496** **TOTAL \$56,496**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rockwell, T H ARC/Lauber, J K 69-Psych, NEC  
Giffen, W C

**NAG 3-28** **Ohio State University** **3658**  
Effects of ice formation on 2D aerodynamic shapes  
*Period* *Obligations*  
02/01/80-01/30/82 **FY81 \$55,000** **TOTAL \$83,528**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Gregorek, G M LERC/Shaw, R J 41-Aero Engr

**NAG 3-36** **Ohio State University** **3659**  
Vibration analysis of turbine engine blades  
*Period* *Obligations*  
05/01/80-04/29/82 **FY81 \$54,326** **TOTAL \$98,736**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Leissa, A W LERC/Brown, G V 46-Mech Engr

**NAG 3-109** **Ohio State University** **3660**  
Propeller/rotor icing study  
*Period* *Obligations*  
10/06/80-10/05/81 **FY81** **TOTAL \$40,099**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Korkan, K D LERC/Shaw, J 41-Aero Engr

**NAG 3-118** **Ohio State University** **3661**  
Study of airfoils for propeller application (acoustics/performance)  
*Period* *Obligations*  
10/27/80-10/26/81 **FY81 \$31,659** **TOTAL \$31,659**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Korkan, K D LERC/Bober, L J 41-Aero Engr  
LERC/Mikkelsen, D C

**NAG 3-159** **Ohio State University** **3662**  
Engineering calculations for communications satellite systems planning  
*Period* *Obligations*  
01/20/81-07/14/82 **FY81 \$93,304** **TOTAL \$93,304**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Levis, C A LERC/Miller, E F 45-Elec Engr  
LERC/Whyte, W A

**NAG 5-42** **Ohio State University** **3663**  
Spectroscopic investigations of bright gaseous nebulae  
*Period* *Obligations*  
04/15/80-06/30/81 **FY81** **TOTAL \$3,877**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Czyzak, S J GSFC/Bogges, A 11-Astronomy

**NAG 5-52** **Ohio State University** **3664**  
Ultraviolet studies of later type beryllium stars  
*Period* *Obligations*  
05/15/80-08/31/82 **FY81 \$7,999** **TOTAL \$10,865**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sletteback, A GSFC/Bogges, A 11-Astronomy

**NAGW 31** **Ohio State University** **3665**  
The infrared spectral analysis of CF2Cl2 Application to atmospheric detection and abundance measurements for planned in-site experiments  
*Period* *Obligations*  
02/01/80-04/30/81 **FY81** **TOTAL \$29,995**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Nordstrom, R J HQ-EB/Watson, R T 31-Atmos Sci

**NAS 1-14406** **Ohio State University** **3666**  
General aviation low-speed airfoil design and development service  
*Period* *Obligations*  
06/30/76-06/30/81 **FY81** **TOTAL \$373,107**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Gregorek, G M LARC/McGhee, R J 41-Aero Engr  
LARC/Barnwell, R W



# NASA'S UNIVERSITY PROGRAM

## OHIO (Continued)

**NAS 1-15680** **Ohio State University** **3667**  
Flight evaluation of the aeroacoustics of general aviation propellers  
*Period* *Obligations*  
01/04/79-05/15/82 **FY81 \$99,947** **TOTAL \$205,436**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Gregorek, G M LARC/Greene, G C 41-Aero Engr  
Korkan, K D LARC/Raney, J P  
Weislogel, G S

**NAS 1-15969** **Ohio State University** **3668**  
Determine the IFR operation profile of the general aviation single pilot  
*Period* *Obligations*  
09/12/79-11/30/81 **FY81 \$10,916** **TOTAL \$71,916**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Weislogel, G S LARC/Bergeron, H P 41-Aero Engr

**NAS 1-16388** **Ohio State University** **3669**  
Bellanca skyrocket natural laminar flow flight research  
*Period* *Obligations*  
08/20/80-01/15/82 **FY81 \$119,489** **TOTAL \$152,489**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Gregorek, G M LARC/Holmes, B J 41-Aero Engr

**NAS 5-25888** **Ohio State University** **3670**  
Utilization of range-difference observation in geodynamics  
*Period* *Obligations*  
09/19/79-12/18/82 **FY81 \$40,000** **TOTAL \$100,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Mueller, I I GSFC/Stephanides, C C 32-Geological Sci

**NASW 3149** **Ohio State University** **3671**  
Solar terrestrial climatic relationship symposium  
*Period* *Obligations*  
05/15/78-12/31/79 **FY81** **TOTAL \$24,946**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Seliga, T A HQ-SC/Tilford, S G 31-Atmos Sci  
HQ-SC/Simon, N K

**NASW 3393** **Ohio State University** **3672**  
Study involving communications link characterizations experiments with the COMSTAR satellite  
*Period* *Obligations*  
06/14/80-03/14/81 **FY81** **TOTAL \$195,988**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hodge, D B HQ-EC/Ippolito, L J 45-Elec Engr

**NCA 2-565001** **Ohio State University** **3673**  
An introductory study of the H-force rotor  
*Period* *Obligations*  
11/01/79-12/31/81 **FY81** **TOTAL \$33,569**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Velkoff, H R ARC/Stroub, R H 41-Aero Engr

**NCA 2-565101** **Ohio State University** **3674**  
Investigation of truncation error associated with transonic full potential equation and optimum redistribution of grid points  
*Period* *Obligations*  
07/01/81-06/30/82 **FY81 \$10,000** **TOTAL \$10,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Nakamura, S ARC/Holst, T L 41-Aero Engr

**NCA 2-565102** **Ohio State University** **3675**  
Experimental investigation of flow fields of rotors in hover with modified tips  
*Period* *Obligations*  
07/01/81-09/30/81 **FY81 \$14,995** **TOTAL \$14,995**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Velkoff, H R ARC/Stroub, R H 41-Aero Engr

**NCA 2-565901** **Ohio State University** **3676**  
Relaxation algorithms applied to grid generation (ADI)  
*Period* *Obligations*  
07/01/79-08/31/81 **FY81** **TOTAL \$36,720**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Nakamura, S ARC/Holst, T L 41-Aero Engr

**NGR 36-008-161** **Ohio State University** **3677**  
The direct combination of satellite and gravity data  
*Period* *Obligations*  
05/01/71-02/28/82 **FY81 \$39,228** **TOTAL \$320,397**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rapp, R H GSFC/Welker, J 32-Geological Sci

**NSG 1498** **Ohio State University** **3678**  
Analysis of airborne antenna patterns  
*Period* *Obligations*  
01/16/78-01/15/82 **FY81 \$49,982** **TOTAL \$169,493**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Burnside, W D LARC/Gilreath, M C 45-Elec Engr  
LARC/Croswell, W F

**NSG 1613** **Ohio State University** **3679**  
Radar cross section studies  
*Period* *Obligations*  
05/01/79-04/30/82 **FY81 \$111,718** **TOTAL \$236,626**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Peters, L LARC/Gilreath, M C 45-Elec Engr  
Burnside, W D

**NSG 1620** **Ohio State University** **3680**  
Applications of a kinesthetic tactual display for aircraft control  
*Period* *Obligations*  
05/16/79-08/15/80 **FY81** **TOTAL \$40,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Gilson, R D LARC/Holmes, B J 41-Aero Engr  
Shulman, H G LARC/Brown, P W

## NASA'S UNIVERSITY PROGRAM

### OHIO (Continued)

NSG 1622	Ohio State University	3681
Viscous interaction effects on airfoil performances		
<i>Period</i>	<i>Obligations</i>	
07/01/79-12/31/81	FY81	TOTAL \$79,860
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Burggraf, O R	LARC/Everhart, J L	41-Aero Engr
	LARC/South, J C	

NSG 3247	Ohio State University	3688
Propeller aero-acoustic methodology		
<i>Period</i>	<i>Obligations</i>	
01/15/79-09/29/82	FY81 \$8,520	TOTAL \$205,624
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gregorek, G M	LERC/Mitchell, G A	41-Aero Engr
Korkan, K D		

NSG 2162		Ohio State University		3682
Electronic search technology applicable to the search for extraterrestrial intelligence problem				
Period		Obligations		
06/01/76-12/31/81	FY81	\$10,000	TOTAL	\$60,181
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Kraus, J D	ARC/Wolfe, J H		45-Elec Engr	
Dixon, R S	ARC/Billingham, J			

<b>NSG 3269</b>	<b>Ohio State University</b>	<b>3689</b>
In search of a theoretical foundation for quantitative ultrasonic measurement		
<i>Period</i>		<i>Obligations</i>
05/01/79-10/06/81	FY81	TOTAL \$47,887
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fu, L S	LERC/Vary, A	47-Materials Engr

NSG 2175	Ohio State University	3683
Laboratory infrared research relevant to atmospheric and planetary studies		
<i>Period</i>	<i>Obligations</i>	
10/01/76-09/30/82	FY81	TOTAL \$156,238
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rao, K N	ARC/Boese, R W	13-Physics

<b>NSG 3302</b>	<b>Ohio State University</b>	<b>3690</b>
The application of optical computing techniques to jet engine controls		
<i>Period</i>	<i>Obligations</i>	
08/01/79-07/30/82	FY81 \$79,996	TOTAL \$179,927
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Collins, S A , Jr	LERC/Baumhik, R J	45-Elec Engr
	LERC/Sellers, J F	

NSG 2179	Ohio State University	3684
Study of tactual sensing and transmittal of information		
<i>Period</i>	<i>Obligations</i>	
09/01/76-04/30/82	FY81 \$20,172	TOTAL \$212,018
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jagacinski, R J	ARC/Dunn, R S	69-Psych, NEC
Gilson, R D		

NSG 5265	Ohio State University	3691
Basic research for the Earth dynamics program		
<i>Period</i>		<i>Obligations</i>
04/01/78-01/31/83	FY81 \$65,000	TOTAL \$310,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mueller, I I	GSFC/Welker, J	32-Geological Sci
Uotila, U A	GSFC/Smith, D E	

NSG 2220	Ohio State University	3685
Environmental and genetic effects on gravity receptors A		
morphological, physiological and behavioral study		
<i>Period</i>	<i>Obligations</i>	
05/01/77-11/30/81	FY81 \$43,459	TOTAL \$162,308
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lim, D J	ARC/Mehler, W R	51-Biological Sci

<b>NSG 5299</b>	<b>Ohio State University</b>	<b>3692</b>
<b>A search for variations in the spectrum</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/15/78-09/14/82</b>	<b>FY81</b>	<b>TOTAL \$1,735</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Slettebak, A E</b>	<b>GSFC/Wende, C</b>	<b>11-Astronomy</b>

<b>NSG 3164</b>	<b>Ohio State University</b>	<b>3686</b>
<b>Deformation structures in metal crystals due to wear and machining at high speed</b>		
<i>Period</i>	<i>Obligations</i>	
12/01/77-12/30/81	FY81. \$33,025	TOTAL \$110,835
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Black, J T	LERC/Bill, R C	47-Materials Engr
	LERC/Ludwig, L P	

NSG 5368	Ohio State University	3693
Research of binary systems and composite sources involving cool and hot components		
<i>Period</i>	<i>Obligations</i>	
06/01/79-05/31/82	FY81 \$10,540	TOTAL \$28,240
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wing, R F	GSFC/Boggess, A	11-Astronomy
Stencel, R E		
Linsky, J. L		

NSG 3235	Ohio State University	3687
Mechanism of fiber release during pyrolysis of carbon fiber reinforced plastics		
<i>Period</i>		<i>Obligations</i>
12/01/78-11/30/81	FY81	TOTAL \$93,186
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, E E	LERC/Bowles, K J	49-Engr, NEC
	LERC/Serafini, T T	

NSG 7479	Ohio State University	3694
Investigation of infrared spectra of atmospheric gases to support stratospheric spectroscopic observations		
Period	Obligations	
11/01/78-10/31/82	FY81 \$112,395	TOTAL \$219,029
Prin Invest	NASA Tech Officer	CASE Category
Shaw, J H	HQ-EB/Chandra, S	31-Atmos Sci
	HQ-EB/Watson, R T	

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAG 1-124** **Ohio University** **3695**  
An investigation of methods for efficient transfer of weather information to the pilot

<i>Period</i>	<i>Obligations</i>	
12/01/80-11/30/81	FY81 \$29,952	TOTAL \$29,952
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McFarland, R H	LARC/Adams, J J	41-Aero Engr

**NGR 36-009-017** **Ohio University** **3696**  
Air transportation systems Emphasis on low frequency navigation

<i>Period</i>	<i>Obligations</i>	
02/26/71-11/30/83	FY81 \$75,000	TOTAL \$766,405
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McFarland, R H	LARC/Downing, D R	45-Elec Engr
	LARC/Howell, W E	

**NAG 3-50** **University of Akron** **3697**  
NASA LERC/Akron University graduate cooperative fellowship programs

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/30/82	FY81 \$40,000	TOTAL \$70,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simon, A L	LERC/Chamis, C C	41-Aero Engr
Fertis, D G	LERC/Johns, R H	

**NAG 3-54** **University of Akron** **3698**  
Self adaptive solutions strategies

<i>Period</i>	<i>Obligations</i>	
08/01/80-02/28/83	FY81 \$50,000	TOTAL \$80,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Padovan, J	LERC/Chamis, C C	46-Mech Engr

**NAG 3-55** **University of Akron** **3699**  
Helicopter transmission reliability model

<i>Period</i>	<i>Obligations</i>	
08/01/80-07/30/82	FY81 \$41,342	TOTAL \$77,630
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Savage, M	LERC/Coy, J J	46-Mech Engr

**NAS 9-16043** **University of Akron** **3700**  
Life science experiment

<i>Period</i>	<i>Obligations</i>	
01/17/80-01/31/82	FY81	TOTAL \$14,120
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Herron, D E	JSC/French, B O	59-Life Sci, NEC

**NCA 2-5101** **University of Akron** **3701**  
The identification of a practicable legal regime for the carriage of goods and persons to, from and within outer space

<i>Period</i>	<i>Obligations</i>	
10/01/80-04/01/82	FY81 \$30,000	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Desaussure, H	ARC/Glazer, J H	99-Multi-Discip
Rizza, J R	ARC/Pittman, R B	

**NCC 2-131** **University of Akron** **3702**  
Elastomer compositions for aircraft tires

<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$34,212	TOTAL \$34,212
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hamed, G	ARC/Golub, M A	13-Physics
	ARC/Parker, J A	

**NGT 36-001-800** **University of Akron** **3703**  
Optimization structural analysis and dynamics

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$13,000	TOTAL \$24,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fertis, D G	HQ-LC/Carter, C H	44-Civil Engr

**NGT 36-001-801** **University of Akron** **3704**  
Training grant for algorithms for non-linear problems

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$13,000	TOTAL \$24,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chang, T Y	HQ-LC/Carter, C H	44-Civil Engr

**NSG 3283** **University of Akron** **3705**  
Finite elements for rotor/stator interactive forces in general engine dynamic simulator

<i>Period</i>	<i>Obligations</i>	
08/31/79-07/30/82	FY81 \$85,000	TOTAL \$216,950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Adams, M L	LERC/Chamis, C C	41-Aero Engr
Padovan, J	LERC/Hirschbein, M S	
Pertis, D G		

**NAG 1-8** **University of Cincinnati** **3706**  
Splne collocation for viscous flow over-after body configurations

<i>Period</i>	<i>Obligations</i>	
11/01/79-10/31/81	FY81 \$37,475	TOTAL \$72,473
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rubin, S S	LARC/Swanson, R C	41-Aero Engr
	LARC/Putnam, L E	

**NAG 1-204** **University of Cincinnati** **3707**  
Silicon superlattices II Silicon-germanium (SI-GE) heterostructures and systems

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$45,721	TOTAL \$45,721
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Monarity, J A	LARC/Stermer, R L	45-Elec Engr
	LARC/Hayes, P J	

## NASA'S UNIVERSITY PROGRAM

### OHIO (Continued)

NAG 2-38		University of Cincinnati		3708
Flap-lag-torsional dynamics of extensional and interextensional rotor blades in hover and in forward flight				
Period		Obligations		
07/01/80-06/30/82	FY81	\$31,500	TOTAL	\$63,158
Prin Invest	NASA Tech Officer		CASE Category	
Crespo Da Silva, M R	ARC/Hodges, D H		41-Acro Engr	
	ARC/Mormiston, R A			

NAG 3-26		University of Cincinnati	3709
Experimental study of radial turbine scrolls			
Period	Obligations		
03/01/80-02/27/82	FY81: \$37,000	TOTAL	\$74,230
Prin Invest	NASA Tech Officer	CASE Category	
Tabakoff, W	LERC/McLallin, K L	41-Aero Engr	

<b>NAG 3-52</b>	<b>University of Cincinnati</b>	<b>3710</b>
<b>Analytical study of the compressible three dimensional flow in turbine scrolls</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/27/80-12/26/81</b>	<b>FY81-</b>	<b>TOTAL \$41,486</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Hamed, A A</b>	<b>LERC/Katsanis, T</b>	<b>41-Aero Engr</b>
<b>Baskharone, E A</b>		

<b>NAG 3-128</b>	<b>University of Cincinnati</b>	<b>3711</b>
<b>Therman and structural properties of molecular beam deposited diamond</b>		
<i>Period</i>	<i>Obligations</i>	
11/17/80-11/16/81	FY81 \$10,700	TOTAL \$10,700
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jackson, H	LERC/Riley, T J	13-Physics

NAG 3-193		University of Cincinnati	3712
Investigation of experimental techniques to detect, locate and quantify gear noise in helicopter transmissions			
Period		Obligations	
09/01/81-08/31/82	FY81-	\$49,974	TOTAL \$49,974
Prin Invest	NASA Tech Officer		CASE Category
Flanagan, P M	LERC/Coy, J J		46-Mech Engr
Morse, I E			

NAG 3-194		University of Cincinnati	3713
Study of internal viscous flows			
<i>Period</i>		<i>Obligations</i>	
07/15/81-07/14/82	FY81	\$62,368	TOTAL \$62,368
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Ghia, K N	LERC/Katsanis, T		41-Aero Engr
Ghia, U			

NAS 8-34503		University of Cincinnati	3714
Investigation of improved modal parameter estimation procedure			
<i>Period</i>	<i>Obligations</i>		
08/04/81-08/03/82	FY81 \$13,299	TOTAL \$13,299	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Brown, D L	MSFC/Johnston, G D	41-Aero Engr	
	MSFC/Coleman, A D		

NCA 2-130101		University of Cincinnati	3715
Improvement of parabolized Navier-Stokes solvers for subsonic, transonic, and supersonic flows			
Period		Obligations	
06/01/81-05/31/82	FY81	\$27,300	TOTAL \$27,300
Pnn Invest	NASA Tech Officer		CASE Category
DAVIS, R T	ARC/Rakich, J V		41-Aero Engr

NCA 2-130801	University of Cincinnati	3716
Design and analysis of closed loop guidance laws for VTOL and STOL vehicles		
Period		Obligations
08/15/78-07/01/81	FY81	TOTAL \$34,167
Pnn Invest	NASA Tech Officer	CASE Category
Slater, G L	ARC/Erzberger, H ARC/Xenakis, G	41-Aero Engr

<b>NCA 2-130901</b>	<b>University of Cincinnati</b>	<b>3717</b>
<b>Development of a parabolized Navier-Stokes solver and numerical coordinate generator for subsonic and transonic plane flows</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/79-05/31/81</b>	<b>FY81</b>	<b>TOTAL \$39,216</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Davis, R T</b>	<b>ARC/Rakich, J V</b>	<b>41-Aero Engr</b>

NGT 36-004-800	University of Cincinnati	3718
Graduate student training program in computational fluid dynamics		
Period	Obligations	
07/01/80-12/31/81	FY81 \$100,000	TOTAL \$175,000
Pnn Invest	NASA Tech Officer	CASE Category
Murman, E M	HQ-RT/Graves, R A	41-Aero Engr

NSG 1185	University of Cincinnati	3719
Geometric modeling and analysis of rod-like large space structures		
<i>Period</i>		<i>Obligations</i>
05/01/75-10/31/81	FY81	TOTAL \$182,883
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nayfeh, A H	LARC/Walz, J E	49-Engr, NEC
	LARC/Anderson, M S	

NSG 1486	University of Cincinnati	3720
Investigation of improved modal parameter estimation techniques		
<i>Period</i>	<i>Obligations</i>	
01/16/78-05/31/81	FY81	TOTAL \$122,314
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brown, D L	LARC/Monteith, J H	46-Mech Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NSG 3022**                      **University of Cincinnati**                      **3721**  
Investigation of a new family of semiconductor diodes based  
upon bulk effects of deep impurities  
*Period*                                      *Obligations*  
07/01/74-09/29/82                      **FY81**                      **TOTAL \$222,412**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Henderson, H T                      LERC/Sundberg, G R                      45-Elec Engr

**NSG 3267**                      **University of Cincinnati**                      **3727**  
Analysis of internal viscous flows using theory of spines and  
implicit numerical methods  
*Period*                                      *Obligations*  
04/02/79-04/29/82                      **FY81 \$35,000**                      **TOTAL \$100,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Ghia, K N                      LERC/Kao, H C                      41-Aero Engr  
Ghia, U

**NSG 3024**                      **University of Cincinnati**                      **3722**  
Research into the use of silane pyrolytic deposition methods for  
SiO<sub>2</sub> growth in the construction of stable high energy density  
capacitors  
*Period*                                      *Obligations*  
07/01/74-09/29/82                      **FY81**                      **TOTAL \$135,266**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Nevin, J H                      LERC/Renz, D                      45-Elec Engr

**DEN 3-189**                      **University of Dayton**                      **3728**  
Study and review of permanent magnets for electric vehicle  
propulsion motors propulsion motors  
*Period*                                      *Obligations*  
01/08/80-12/16/81                      **FY81 \$1,959**                      **TOTAL \$59,852**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Strnat, K J                      LERC/Gourash, F                      47-Materials Engr

**NSG 3147**                      **University of Cincinnati**                      **3723**  
High-temperature low-cycle fatigue and crack propagation  
*Period*                                      *Obligations*  
06/01/77-05/31/80                      **FY81**                      **TOTAL \$80,652**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Antolovich, S D                      LERC/Miner, R V, Jr                      47-Materials Engr

**NAG 1-143**                      **University of Dayton**                      **3729**  
Evaluation of moire technique for wind tunnel metrology  
*Period*                                      *Obligations*  
01/01/81-09/30/81                      **FY81 \$29,374**                      **TOTAL \$29,374**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Harris, J S                      LARC/Holmes, H K                      13-Physics  
Harding, K G                      LARC/Burner, A W

**NSG 3188**                      **University of Cincinnati**                      **3724**  
Investigations into the geometry of straight and spiral bevel  
gears  
*Period*                                      *Obligations*  
04/01/78-03/28/82                      **FY81 \$45,000**                      **TOTAL \$100,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Huston, R L                      LERC/Coy, J J                      46-Mech Engr

**NAG 3-65**                      **University of Dayton**                      **3730**  
Development of an airfoil ice accretion model  
*Period*                                      *Obligations*  
04/28/80-04/26/82                      **FY81 \$49,577**                      **TOTAL \$91,528**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Luers, J K                      LERC/Shaw, R J                      41-Aero Engr  
Dietenberger, M A  
Shirley, T E

**NSG 3218**                      **University of Cincinnati**                      **3725**  
Study of environmental solid particle effects on axial flow  
compressor  
*Period*                                      *Obligations*  
11/15/78-11/15/81                      **FY81**                      **TOTAL \$59,667**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Tabakoff, W                      LERC/Stubbs, R M                      46-Mech Engr

**NAS 3-21370**                      **University of Dayton**                      **3731**  
Compilation of ATS-1, 3, 5, 6 and CTS user experiments  
documentation  
*Period*                                      *Obligations*  
06/08/78-06/08/80                      **FY81**                      **TOTAL \$122,178**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Engler, N A                      LERC/Gentile, L C                      42-Astro Engr  
Nash, J

**NSG 3263**                      **University of Cincinnati**                      **3726**  
A mechanistic evaluation of deformation and fracture in high  
temperature low cycle fatigue  
*Period*                                      *Obligations*  
03/26/79-03/25/82                      **FY81 \$33,954**                      **TOTAL \$93,864**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Antolovich, S D                      LERC/Hirschberg, M H  
LERC/Oldrieve, R E                      47-Materials Engr

**NAS 3-22353**                      **University of Dayton**                      **3732**  
Preliminary static impact testing of boron aluminum composite  
tip panels  
*Period*                                      *Obligations*  
01/24/80-01/24/82                      **FY81**                      **TOTAL \$49,843**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bless, S J                      LERC/McDaniels, D L  
Cross, D L                      47-Materials Engr

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NAS 6-3086**                      **University of Dayton**                      **3733**  
 Service, materials and personnel necessary to provide correlative data efforts for WFC field measurements office

<i>Period</i>	<i>Obligations</i>	
03/01/80-02/26/82	FY81 \$39,100	TOTAL \$141,552
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Luers, J K	WFC/Schmidlin, F J	31-Atmos Sci
Keller, J		
Jenks, F		

**NAS 8-33369**                      **University of Dayton**                      **3734**  
 Examination of requirements and methods for reporting atmospheric information

<i>Period</i>	<i>Obligations</i>	
02/12/79-04/11/82	FY81 \$70,011	TOTAL \$155,880
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Leurs, J K	MSFC/Camp, D W	31-Atmos Sci
	MSFC/Alexander, M B	

**NAS 8-34544**                      **University of Dayton**                      **3735**  
 Intermescent coding development

<i>Period</i>	<i>Obligations</i>	
07/17/81-07/16/82	FY81 \$52,544	TOTAL \$52,544
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Salyer, I O	MSFC/Harwell, R J	12-Chemistry
	MSFC/Stuckey, J M	

**NSG 6026**                      **University of Dayton**                      **3736**  
 Study of the effects of heavy rains on aircraft aerodynamics

<i>Period</i>	<i>Obligations</i>	
04/01/79-10/31/81	FY81 \$60,049	TOTAL \$110,978
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Luers, J K	WFC/Carr, R E	41-Aero Engr
Haines, P A		

**NSG 7444**                      **University of Dayton**                      **3737**  
 An investigation of the cratering-induced motions occurring during the formation of bowl-shaped craters

<i>Period</i>	<i>Obligations</i>	
06/01/78-06/30/80	FY81	TOTAL \$48,704
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Piekutowski, A J	HQ-SL/Quaide, W L	32-Geological Sci

**NAG 3-42**                      **University of Toledo**                      **3738**  
 Digital television simulation facility

<i>Period</i>	<i>Obligations</i>	
03/31/80-03/29/82	FY81 \$61,285	TOTAL \$92,613
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kwatra, S C	LERC/Wythe, W	45-Elec Engr

**NAG 3-72**                      **University of Toledo**                      **3739**  
 Numerical simulation of heat transfer phenomena occurring during deicing of aircraft components

<i>Period</i>	<i>Obligations</i>	
06/01/80-08/31/82	FY81 \$40,000	TOTAL \$83,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dewitt, K J	LERC/Shaw, R J	41-Aero Engr
Keith, T G		

**NAG 3-123**                      **University of Toledo**                      **3740**  
 Local area networking support at the Lewis research center

<i>Period</i>	<i>Obligations</i>	
10/20/80-10/19/81	FY81 \$125,529	TOTAL \$125,529
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Solarek, D J	LERC/Schulte, R R	
Ewing, D J	LERC/Cica, D	22-Computer Science

**NAG 3-157**                      **University of Toledo**                      **3741**  
 Interference susceptibility of digital television systems

<i>Period</i>	<i>Obligations</i>	
01/09/81-01/08/82	FY81 \$38,779	TOTAL \$38,779
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kwatra, S C	LERC/Miller, E F	45-Elec Engr
	LERC/Wayne, W A	

**NAG 3-184**                      **University of Toledo**                      **3742**  
 Carbon combustion in zero gravity

<i>Period</i>	<i>Obligations</i>	
06/01/81-12/01/81	FY81 \$15,000	TOTAL \$15,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dewitt, K J	LERC/Labus, T L	13-Physics

**NAG 5-67**                      **University of Toledo**                      **3743**  
 Studies of new bright chromospheric action stars

<i>Period</i>	<i>Obligations</i>	
06/01/80-12/31/81	FY81	TOTAL \$5,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bopp, B W	GSFC/Boggess, A	11-Astronomy

**NAG 5-167**                      **University of Toledo**                      **3744**  
 Correlation of far ultraviolet extinction and illuminating stars of reflection nebulae

<i>Period</i>	<i>Obligations</i>	
05/01/81-11/30/81	FY81 \$5,196	TOTAL \$5,196
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Witt, W N	GSFC/Boggess, A	11-Astronomy
Bohlin, R C		
Stecher, T P		

**NAGW 89**                      **University of Toledo**                      **3745**  
 Properties of interstellar grains

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$16,458	TOTAL \$32,527
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Witt, A	HQ-SC/Weiler, E J	11-Astronomy
	HQ-SC/Boggess, N W	

**NAGW 229**                      **University of Toledo**                      **3746**  
 Chromospheric activity in the FK Comae stars

<i>Period</i>	<i>Obligations</i>	
09/01/81-02/28/83	FY81 \$9,895	TOTAL \$9,895
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bopp, B W	HQ-SC/Weiler, E J	11-Astronomy
	HQ-SC/Boggess, N W	

**NASA'S UNIVERSITY PROGRAM**  
**OHIO (Continued)**

**NCC 3-5**                      **University of Toledo**                      **3747**  
 Evaluation of the performance of wind turbine concepts and  
 operating wind turbines  
*Period*                                      *Obligations*  
 09/15/79-01/12/82                      FY81 \$101,377                      TOTAL \$201,370  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Keith, T G , Jr                      LERC/Glasgow, J C                      49-Engr, NEC  
    LERC/Finnegan, P M

**NSG 3121**                      **University of Toledo**                      **3748**  
 Mass transport phenomena between bubbles and dissolved gases  
 in liquids in a zero-G environment  
*Period*                                      *Obligations*  
 09/01/76-12/31/80                      FY81                      TOTAL \$20,914  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Dewitt, K J                      LERC/Labus, T L                      49-Engr, NEC

**NSG 3139**                      **University of Toledo**                      **3749**  
 Stability analysis of wind turbines with long, flexible blades  
*Period*                                      *Obligations*  
 02/22/77-02/03/82                      FY81 \$60,000                      TOTAL \$256,944  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Kaza, K R                      LERC/Brown, G V                      41-Aero Engr

**NSG 3156**                      **University of Toledo**                      **3750**  
 Analysis of the Stirling engine oil pumping ring seal  
*Period*                                      *Obligations*  
 07/01/77-12/31/81                      FY81                      TOTAL \$69,378  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Keith, T E                      LERC/Ludwig, L P                      46-Mech Engr  
 Smith, P J

**NSG 3250**                      **University of Toledo**                      **3751**  
 Thermodynamics of the potassium-sulfur-oxygen and related  
 items  
*Period*                                      *Obligations*  
 06/15/79-12/14/81                      FY81                      TOTAL \$80,540  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Edwards, J G                      LERC/Stearns, C A                      12-Chemistry  
    LERC/Kohl, F J

**NSG 3281**                      **University of Toledo**                      **3752**  
 An investigation of the high frequency performance of series  
 resonant inverters  
*Period*                                      *Obligations*  
 06/01/79-08/29/82                      FY81 \$30,830                      TOTAL \$55,792  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Stuart, T A                      LERC/Gruber, R P                      45-Elec Engr

**NSG 5359**                      **University of Toledo**                      **3753**  
 Ultraviolet observations of various type supergiants  
*Period*                                      *Obligations*  
 06/01/79-02/28/82                      FY81                      TOTAL \$17,544  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Morrison, N D                      GSFC/Boggess, A                      11-Astronomy

**NSG 5388**                      **University of Toledo**                      **3754**  
 Phase function studies in reflection nebulae with the International  
 Ultraviolet experiment  
*Period*                                      *Obligations*  
 07/01/79-12/31/80                      FY81                      TOTAL \$13,994  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Witt, A N                      GSFC/Boggess, A                      11-Astronomy  
 Stecher, T P  
 Bohlin, R C

**NSG 7301**                      **University of Toledo**                      **3755**  
 Physical study of comets  
*Period*                                      *Obligations*  
 01/01/77-09/30/81                      FY81                      TOTAL \$61,366  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Delsemme, A H                      HQ-SL/Murphy, R                      11-Astronomy  
    HQ-SL/Brunk, W E

**NSG 7620**                      **University of Toledo**                      **3756**  
 Phase function studies in reflection nebulae  
*Period*                                      *Obligations*  
 09/01/79-08/01/80                      FY81                      TOTAL \$13,245  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Witt, A N                      HQ-SC/Weiler, E J                      11-Astronomy  
    HQ-SC/Roman, N G

**NAS 9-16041**                      **Wright State University**                      **3757**  
 Life science flight experiment    Isometric exercise performance  
 under zero-gravity conditions  
*Period*                                      *Obligations*  
 01/17/80-01/31/82                      FY81                      TOTAL \$28,129  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Petrofsky, J S                      JSC/French, B O                      59-Life Sci, NEC

**NCA 2-875002**                      **Wright State University**                      **3758**  
 Motion sickness in the cat    Chemical aspects  
*Period*                                      *Obligations*  
 01/01/80-12/31/81                      FY81 \$18,000                      TOTAL \$47,934  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Crampton, G H                      ARC/Daunton, N G                      51-Biological Sci

**NGT 36-024-790**                      **Wright State University**                      **3759**  
 Aerospace medicine residency program  
*Period*                                      *Obligations*  
 07/01/78-06/30/82                      FY81 \$249,998                      TOTAL \$771,560  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Mohler, S R                      HQ-SB/Nicogossian, A E  
 Beljan, J                      HQ-LC/Carter, C H                      59-Life Sci, NEC

**NAG 1-88**                      **Youngstown State University**                      **3760**  
 Control augmentation for lateral control wheel steering  
*Period*                                      *Obligations*  
 07/14/80-08/13/81                      FY81                      TOTAL \$25,618  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Foulkes, R H                      LARC/Creedon, J F                      41-Aero Engr

# NASA'S UNIVERSITY PROGRAM OKLAHOMA

## OKLAHOMA

**NAG 1-159** **Oklahoma State University** **3761**  
Research on the noise produced by large scale structure in supersonic jets  
*Period* *Obligations*  
03/01/81-04/30/82 **FY81 \$40,932** **TOTAL \$40,932**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
McLaughlin, D K LARC/Seiner, J M 41-Aero Engr

**NAG 2-76** **Oklahoma State University** **3762**  
Correlation of transonic-cone preston-tube data and skin friction  
*Period* *Obligations*  
11/01/80-01/31/82 **FY81 \$54,210** **TOTAL \$54,210**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Reed, T D ARC/Steinle, F W 41-Aero Engr

**NAG 3-74** **Oklahoma State University** **3763**  
Investigations of flow fields found in typical combustor geometries  
*Period* *Obligations*  
07/01/80-07/30/82 **FY81 \$92,000** **TOTAL \$141,230**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lilley, D G LERC/Holderman, J D 41-Aero Engr  
McLaughlin, D K

**NAGW 26** **Oklahoma State University** **3764**  
Microbial ecology of extreme environments Antarctic dry valley yeasts and growth in substrate-limited habitats  
*Period* *Obligations*  
12/01/79-11/30/81 **FY81 \$48,532** **TOTAL \$94,532**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Vishniac, H S HQ-SB/Devincenzi, D L 51-Biological Sci

**NAS 2-10467** **Oklahoma State University** **3765**  
Operation of a visitor, tour, and an aeronautical research information and communication program  
*Period* *Obligations*  
12/01/79-05/31/81 **FY81 \$74,372** **TOTAL \$217,074**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wiggins, K E ARC/Miller, S A 41-Aero Engr  
ARC/Fenrick, C J

**NAS 6-2970** **Oklahoma State University** **3766**  
Mobile telemetry tracking systems  
*Period* *Obligations*  
02/01/79-05/31/81 **FY81** **TOTAL \$304,290**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Buck, R F WFC/West, W W 49-Engr, NEC  
WFC/Powell, W R

**NAS 6-3103** **Oklahoma State University** **3767**  
Mini-tracker ranging system  
*Period* *Obligations*  
05/12/80-11/11/81 **FY81** **TOTAL \$378,200**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Fike, R M WFC/Boykin, F M 49-Engr, NEC  
WFC/West, W W

**NASW 3313** **Oklahoma State University** **3768**  
Spacemobile operation and management of aerospace education services project  
*Period* *Obligations*  
10/01/79-09/30/81 **FY81 \$1,230,488** **TOTAL \$2,125,406**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Wiggins, K HQ-LC/Graves, C M 99-Multi-Discip  
HQ-LC/Bilbrough, L B

**NAS13-184** **Oklahoma State University** **3769**  
Development of LANDSAT/geobased information system requirements for substate demonstration project  
*Period* *Obligations*  
09/01/81-08/31/82 **FY81 \$17,975** **TOTAL \$17,975**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Walsh, S J NSTL/Barlow, R M 32-Geological Sci

**NSG 2396** **Oklahoma State University** **3770**  
Study of boundary layer transition using transonic-cone preston-tube data  
*Period* *Obligations*  
07/01/79-03/31/81 **FY81** **TOTAL \$46,912**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Moretti, P M ARC/Steinle, F W 41-Aero Engr  
Reed, T D

**NSG 6018** **Oklahoma State University** **3771**  
Investigation for improved precision in aerial application equipment  
*Period* *Obligations*  
10/01/77-09/30/81 **FY81 \$33,243** **TOTAL \$164,737**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Roth, L O WFC/Carr, R E 49-Engr, NEC  
Whitney, R W

**NSG 7640** **Oklahoma State University** **3772**  
Remote sensing applications to Oklahoma resources and environmental problems  
*Period* *Obligations*  
09/01/79-08/31/84 **FY81 \$100,000** **TOTAL \$385,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Walsh, S HQ-ET/Vitale, J A 31-Atmos Sci

**NASW 3180** **Southeastern Oklahoma State Univ** **3773**  
Operation of a NASA industrial application center  
*Period* *Obligations*  
10/01/78-06/30/81 **FY81** **TOTAL \$569,061**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Oliver, R HQ-ET/Bivins, R 49-Engr, NEC



# **NASA'S UNIVERSITY PROGRAM** **OKLAHOMA (Continued)**

**NASW 3498**      **Southeastern Oklahoma State Univ**      **3774**  
Operation of Kerr industrial application center  
*Period*      *Obligations*  
07/01/81-06/30/82      **FY81 \$94,841**      **TOTAL \$94,841**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Harmon, J      HQ-ET/Bivins, R G      99-Multi-Discip  
HQ-ET/Ault, L A

**NAG 9-18**      **Univ of Oklahoma - Health Science Ctr**      **3775**  
Inhibition by camp by lymphocyte plasma membrane endogenous phosphorylase study  
*Period*      *Obligations*  
06/01/81-05/31/82      **FY81 \$20,000**      **TOTAL \$20,000**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Nordquist, R      JSC/Lucid, S      56-Medical Sciences

**NAS 2-10408**      **Univ of Oklahoma - Health Science Ctr**      **3776**  
Cosmos 1981 experiment Carotid arterial flow and pressure measurement of primates  
*Period*      *Obligations*  
10/01/79-07/31/83      **FY81 \$20,000**      **TOTAL \$90,000**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Stone, H L      ARC/Heinrich, M R      51-Biological Sci

**NAS 2-10526**      **Univ of Oklahoma - Health Science Ctr**      **3777**  
Mechanism(s) underlying fluid volume shifts in zero-gravity  
*Period*      *Obligations*  
01/17/80-09/30/81      **FY81**      **TOTAL \$37,825**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Stone, H L      ARC/Ferandin, J      51-Biological Sci  
ARC/Lee, R D

**NAS 2-10529**      **Univ of Oklahoma - Health Science Ctr**      **3778**  
Cardiovascular deconditioning correlated with with biochemical and histological indices of cardiac muscle function following zero-gravity exposure  
*Period*      *Obligations*  
01/17/80-04/30/81      **FY81 \$1,718**      **TOTAL \$4,154**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Dowell, R T      ARC/Ferandin, J      51-Biological Sci  
ARC/Polson, P

**NCA 2-580101**      **Univ of Oklahoma - Health Science Ctr**      **3779**  
Cardiovascular response in the exercise-trained and exercise-conditioned dog  
*Period*      *Obligations*  
07/01/81-06/30/83      **FY81 \$11,144**      **TOTAL \$11,144**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Stone, H L      ARC/Sandler, H      51-Biological Sci

**NCC 2-24**      **Univ of Oklahoma - Health Science Ctr**      **3780**  
Central and peripheral mechanisms underlying cardiovascular deconditioning in the unanesthetized primate  
*Period*      *Obligations*  
11/01/79-10/31/81      **FY81 \$89,014**      **TOTAL \$148,225**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Stone, H L      ARC/Sandler, H      59-Life Sci, NEC

**NAG 8-372**      **University of Oklahoma - Norman**      **3781**  
Observations of the rapid variable AE AQR in the High Energy Astronomical Observatory-B guest investigator program  
*Period*      *Obligations*  
09/15/80-09/15/82      **FY81**      **TOTAL \$5,892**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Chincarini, G      MSFC/Stone, J F      11-Astronomy

**NAS13-156**      **University of Oklahoma - Norman**      **3782**  
Developing seminars and short courses in state of the art remote sensing techniques  
*Period*      *Obligations*  
07/28/80-07/27/81      **FY81**      **TOTAL \$12,000**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Unavailable      NSTL/Atwell, B H      32-Geological Sci

**NCA 2-580901**      **University of Oklahoma - Norman**      **3783**  
Cardiac function and exercise training  
*Period*      *Obligations*  
07/01/79-06/30/81      **FY81 \$16,031**      **TOTAL \$43,061**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Stone, H L      ARC/Sandler, H      51-Biological Sci

## **OREGON**

**NAG 1-160**      **Oregon Graduate Center**      **3784**  
Systematic global measurements of methane and carbon monoxide  
*Period*      *Obligations*  
03/03/81-03/02/82      **FY81 \$119,124**      **TOTAL \$119,124**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Rasmussen, R A      LARC/Reichle, H G      31-Atmos Sci  
Khalil, M A      LARC/Wallio, H A

**NGT 38-014-800**      **Oregon Graduate Center**      **3785**  
Graduate student researchers program  
*Period*      *Obligations*  
05/01/81-04/30/82      **FY81 \$10,750**      **TOTAL \$10,750**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Elliott, R A      HQ-LC/Carter, C H      13-Physics

**NSG 2387**      **Oregon Graduate Center**      **3786**  
Evaluation of turbulence induced noise in coherent anti-Stokes Raman scattering  
*Period*      *Obligations*  
06/01/79-06/30/82      **FY81 \$23,998**      **TOTAL \$62,964**  
*Pnn Invest*      *NASA Tech Officer*      *CASE Category*  
Elliott, R A      ARC/McKenzie, R L      13-Physics

## NASA'S UNIVERSITY PROGRAM

### OREGON (Continued)

NSG 7457	Oregon Graduate Center	3787
Spatial and temporal variations in atmospheric carbon concentration		
<i>Period</i>	<i>Obligations</i>	
05/01/78-01/31/82	FY81 \$75,000	TOTAL \$299,148
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rasmussen, R A	HQ-EB/Watson, R T	31-Atmos Sci
	HQ-EB/Chandra, S	

<b>NAG 3-87</b>	<b>Oregon State University</b>	<b>3788</b>
<b>Wind turbine structural design and analysis</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/15/80-08/13/82</b>	<b>FY81 \$43,000</b>	<b>TOTAL \$85,732</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Thresher, R W</b>	<b>LERC/Spera, D A</b>	<b>46-Mech Engr</b>
	<b>LERC/Finnegan, P M</b>	

<b>NAG 5-51</b>	<b>Oregon State University</b>	<b>3789</b>
<b>Investigation of small-scale terrain effects within climate models</b>		
<i>Period</i>	<i>Obligations</i>	
05/15/80-05/14/82	FY81 \$64,398	<b>TOTAL \$127,530</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Deardorff, J W	GSFC/Shukla, J	31-Atmos Sci

<b>NAG 5-206</b>	<b>Oregon State University</b>	<b>3790</b>
<b>Diagnosis of seasonal climate change</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/81-09/30/82	FY81 \$60,000	TOTAL \$60,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gates, W L	GSFC/Shukla, J	31-Atmos Sci
Esbensen, S K		
Kim, J W		

NAG 9-2		Oregon State University		3791
Neotectonics of Pakistan				
Period	Obligations			
02/01/80-01/31/82	FY81	\$40,000	TOTAL	\$100,000
Prin Invest	NASA Tech Officer		CASE Category	
Lawrence, R D	JSC/Phinney, W C		32-Geological Sci	

NCA 2-586001		Oregon State University	3792
Improving convergence to the steady state			
<i>Period</i>		<i>Obligations</i>	
06/01/80-09/30/81	FY81. \$9,630	TOTAL	\$22,265
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Jespersen, D C	ARC/Lomax, H	21-Mathematics	

NCA 2-586101		Oregon State University	3793
Cooperative development of improved computing capability for LANDSAT analysis			
<i>Period</i>		<i>Obligations</i>	
04/01/81-10/31/81	FY81	\$13,000	TOTAL \$13,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Isaacson, D L	ARC/Wilson, D E		39-Env Sci, NEC

NGL 38-002-039		Oregon State University	3794
Lunar sample analysis			
Period		Obligations	
01/19/71-01/31/82	FY81	\$84,900	TOTAL \$701,981
Pnn Invest	NASA Tech Officer		CASE Category
Schmitt, R A	JSC/Harris, J W		13-Physics

<b>NGL 38-002-053</b>	<b>Oregon State University</b>	<b>3795</b>
<b>Development and operation of an environmental remote sensing applications laboratory</b>		
<i>Period</i>	<i>Obligations</i>	
<b>03/16/72-03/31/84</b>	<b>FY81 \$150,000</b>	<b>TOTAL \$1,325,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Schrumpf, B J</b>	<b>HQ-ET/Vitale, J A</b>	<b>39-Env Sci, NEC</b>

NSG 5308	Oregon State University	3796
Analyses of the surface heat balance over the world ocean		
<i>Period</i>	<i>Obligations</i>	
12/01/78-09/30/81	FY81	TOTAL \$95,747
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Esbensen, S	GSFC/Halem, M	31-Atmos Sci

NSG 5343	Oregon State University	3797
Techniques for applications of satellite data to the quantitative forecasting of precipitation		
<i>Period</i>	<i>Obligations</i>	
05/01/79-12/31/80	FY81	TOTAL \$64,565
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Decker, F W	GSFC/Adler, R F	31-Atmos Sci

NSG 5353	Oregon State University	3798
Numerical simulation of large scale ocean atmosphere coupling and the ocean's role in climate		
<i>Period</i>	<i>Obligations</i>	
05/01/79-06/14/82	FY81 \$190,000	TOTAL \$580,259
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gates, W L	GSFC/Halem, M	31-Atmos Sci

NSG 7178		Oregon State University		3799
Examination of the suggested modes of origin of channels found on the Moon and Mars				
Period		Obligations		
01/01/76-01/31/82		FY81 \$31,115	TOTAL \$144,076	
Prin Invest		NASA Tech Officer	CASE Category	
Komar, P D		HQ-SL/Boyce, J M	32-Geological Sci	
		HQ-SL/Holt, H E		

NAG 2-7		University of Oregon - Eugene		3800
Hydrodynamics and turbulence in quantum fluids				
Period		Obligations		
11/01/79-10/31/81		FY81	\$58,332	TOTAL \$120,332
Prin	Invest	NASA Tech Officer		CASE Category
Donnelly, R		ARC/Brooks, W		13-Physics
		ARC/Lum, H		

### NASA'S UNIVERSITY PROGRAM OREGON (Continued)

<b>NAG 2-131</b>	<b>University of Oregon - Eugene</b>	<b>3801</b>
<b>Tests of a derivative spectrometer for detecting low-mass stellar companions</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/81-08/31/82</b>	<b>FY81 \$16,891</b>	<b>TOTAL \$16,891</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Kemp, J C</b>	<b>ARC/Black, D C</b>	<b>11-Astronomy</b>

NAGW 7		University of Oregon - Eugene	3802
Optical monitoring of Cygnus X-1, X Persei, and other X-ray sources			
Period		Obligations	
10/01/79-02/28/81	FY81	TOTAL	\$20,054
Prin Invest	NASA Tech Officer	CASE Category	
Kemp, J C	HQ-SC/Kaluzienski, L J	11-Astronomy	
	HO-SC/Holt, S S		

NAGW 222		University of Oregon - Eugene		3803	
Far infrared measurements of trace constituents					
Period		Obligations			
07/15/81-07/14/82		FY81 \$137,134		TOTAL \$137,134	
Prn Invest		NASA Tech Officer		CASE Category	
Nolt, I G		HQ-EB/Chan, K R		31-Atmos Sci	
Radostitz, J V		HQ-EB/Watson, R T			

<b>NGL 38-003-022</b>	<b>University of Oregon - Eugene</b>	<b>3804</b>
<b>Lunar sample analysis</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/09/71-04/30/82</b>	<b>FY81</b>	<b>TOTAL \$701,892</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Weill, D F</b>	<b>JSC/Warner, J L</b>	<b>13-Physics</b>

NGR 38-003-020	University of Oregon - Eugene	3805
Inspection of petrologically significant physical and chemical properties of the silicate melts		
Period		Obligations
06/01/70-02/28/82	FY81	TOTAL \$655,671
Prim Invest	NASA Tech Officer	CASE Category
Weill, D F	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B E	

<b>NSG 7360</b>	<b>University of Oregon - Eugene</b>	<b>3806</b>
<b>Far-infrared measurements of trace constituents</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/77-09/30/80	FY81	TOTAL \$138,628
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nolt, I G	HQ-SC/Kakar, R K	31-Atmos Sci
Radostitz, J V	HQ-SC/Tilford, S	
Donnelly, R J		

<b>NSG 7639</b>	<b>University of Oregon - Eugene</b>	<b>3807</b>
<b>Spectrum of the continuous gravitational radiation background</b>		
<i>Period</i>		<i>Obligations</i>
<b>09/30/79-09/30/81</b>	<b>FY81</b>	<b>TOTAL \$23,246</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Zimmerman, R L</b>	<b>HQ-SC/Weiler, E J</b>	<b>11-Astronomy</b>
	<b>HQ-SC/Bogges, N W</b>	

NAS 8-33575	University of Oregon-Health Sci Ctr	3808
Counter current distribution of biologic cells		
<i>Period</i>	<i>Obligations</i>	
11/16/78-11/15/82	FY81 \$83,000	TOTAL \$185,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brooks, D E	MSFC/Moore,, W	W , Jr
	MSFC/Snyder, R	47-Materials Engr

## PENNSYLVANIA

<b>NAG 1-190</b>	<b>Carnegie - Mellon University</b>	<b>3809</b>
<b>Validation systems</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/81-08/31/82	FY81 \$39,738	TOTAL \$39,738
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Siewiorek, D P	LARC/Lupton, A O	45-Elec Engr
	LARC/Palumbo, D L	

<b>NAG 3-5</b>	<b>Carnegie - Mellon University</b>	<b>3810</b>
<b>Electro-optical system controller and processor</b>		
<i>Period</i>	<i>Obligations</i>	
11/01/79-10/31/82	FY81	TOTAL \$159,907
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Casasent, D	LERC/Baumbick, R J	45-Elec Engr
	LERC/Sellers, J F	

<b>NAG 3-21</b>	<b>Carnegie - Mellon University</b>	<b>3811</b>
Formulate a multi-dimensional, unsteady, turbulent, compressible, reacting flow code for Otto cycle codes and engines		
<i>Period</i>	<i>Obligations</i>	
12/15/79-09/30/81	FY81 \$40,000	TOTAL \$139,981
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sirignano, W A	LERC/Schock, H J	46-Mech Engr
Ramos, J I		
Artman, J O		

NAG 3-166		Carnegie - Mellon University		3812
Turbulent flow in cryogenic face seals				
Period		Obligations		
03/15/81-03/14/82		FY81 \$38,155	TOTAL	\$38,155
Pnn Invest		NASA Tech Officer		CASE Category
Hughes, W F		LERC/Hendricks, R C		46-Mech Engr
		LERC/Ludwig, L P		

NGT 39-087-800		Carnegie - Mellon University	3813
Graduate student researchers program			
<i>Period</i>		<i>Obligations</i>	
06/01/81-05/31/82	FY81	\$12,590	TOTAL \$12,590
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Fix, G J	HO-LC/Carter, C H		46-Mech Engr

**NASA'S UNIVERSITY PROGRAM  
PENNSYLVANIA (Continued)**

**NSG 3172** **Carnegie - Mellon University** **3814**  
Evaluation of failure mechanics in composites  
*Period* *Obligations*  
12/01/77-12/01/81 **FY81 \$40,000** **TOTAL \$135,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Swedlow, J L LERC/Srawley, J E 46-Mech Engr  
Baumann, K J LERC/Brown, W F, Jr

**NSG 3202** **Carnegie - Mellon University** **3815**  
A preliminary thermal analysis of reciprocating seals for the Stirling engine  
*Period* *Obligations*  
07/01/78-11/30/80 **FY81** **TOTAL \$62,867**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hughes, W F LERC/Cunningham, R E 46-Mech Engr  
LERC/Ludwig, L P

**NSG 7585** **Carnegie - Mellon University** **3816**  
Iron-60 as a heat source and chronometer in early solar system  
*Period* *Obligations*  
05/01/79-04/30/82 **FY81 \$61,664** **TOTAL \$183,800**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kohman, T P HQ-SL/French, B M 32-Geological Sci  
HQ-SL/Quaide, W L

**NAG 1-110** **Drexel University** **3817**  
Rigorous analytical theory for boundary-free incompressible fluid and homogeneous turbulence  
*Period* *Obligations*  
11/01/80-10/31/81 **FY81 \$40,000** **TOTAL \$40,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rosen, G H LARC/Gatski, T B 46-Mech Engr  
LARC/Shoosmith, J N

**NAG 1-200** **Drexel University** **3818**  
Research on atmospheric volcanic emissions  
*Period* *Obligations*  
06/01/81-05/31/82 **FY81 \$155,000** **TOTAL \$155,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Friend, J P LARC/Fuller, W H, Jr 31-Atmos Sci  
Zoller, W H LARC/McMaster, L R  
Bandy, A R

**NAG 2-8** **Drexel University** **3819**  
Application of variable structure system theory to aircraft flight control  
*Period* *Obligations*  
01/01/80-09/30/82 **FY81 \$78,000** **TOTAL \$112,200**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Calise, A J ARC/Meyer, G 49-Engr, NEC

**NAG 2-10** **Drexel University** **3820**  
Experiments in the formation of aerosols by photo-oxidation of sulfur dioxide  
*Period* *Obligations*  
01/01/80-07/31/82 **FY81 \$24,000** **TOTAL \$57,900**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Friend, J P ARC/Farlow, N H 31-Atmos Sci

**NAG 3-1** **Drexel University** **3821**  
Pollutant formation in monodisperse fuel spray combustion  
*Period* *Obligations*  
11/01/79-10/29/82 **FY81 \$121,193** **TOTAL \$171,193**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Cernansky, N P LERC/Humenik, F 41-Aero Engr

**NAG 3-14** **Drexel University** **3822**  
Microstructure and fatigue behavior of rheocast IN-100  
*Period* *Obligations*  
02/01/80-01/30/82 **FY81 \$53,049** **TOTAL \$94,849**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Apelian, D LERC/Glasgow, T K 47-Materials Engr  
Lawley, A

**NAG 3-183** **Drexel University** **3823**  
Thermal stability of distillate hydrocarbon convergent-divergent nozzles  
*Period* *Obligations*  
10/01/81-09/30/82 **FY81 \$60,000** **TOTAL \$60,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Cohen, R S LERC/Wong, E L 12-Chemistry  
Cernansky, N P LERC/Bittker, D A

**NAG 5-208** **Drexel University** **3824**  
Lower atmospheric composition of Jupiter from Voyager infrared measurements  
*Period* *Obligations*  
09/15/81-09/14/82 **FY81 \$12,300** **TOTAL \$12,300**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Abbar, M GSFC/Magnetore, W C 11-Astronomy  
GSFC/Kunde, V G

**NAGW 84** **Drexel University** **3825**  
Rave research on atmospheric volcanic emissions  
*Period* *Obligations*  
05/01/80-08/31/81 **FY81** **TOTAL \$154,500**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Friend, J P LARC/Fuller, W H, Jr 31-Atmos Sci

**NAS 1-14393** **Drexel University** **3826**  
Science support for the limb infrared monitor of the stratosphere experiment  
*Period* *Obligations*  
04/01/76-03/31/81 **FY81** **TOTAL \$106,556**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
House, F B LARC/Russell, J M, III 31-Atmos Sci  
LARC/James, R L, Jr

**NAS 1-16428** **Drexel University** **3827**  
Scientific investigations for the Earth radiation budget experiment (ERBE)  
*Period* *Obligations*  
09/17/80-09/16/85 **FY81** **TOTAL \$38,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
House, F B LARC/Hall, J B 31-Atmos Sci  
LARC/Barkstrom, B R

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**NAS 5-22946** **Drexel University** **3828**  
Science support for the Earth radiation budget experiment on  
Nimbus G  
*Period* *Obligations*  
01/12/76-09/30/81 **FY81** **TOTAL \$162,908**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
House, F B GSFC/Nelson, E D 13-Physics

**NAS 8-33372** **Drexel University** **3829**  
A critical experiment to support possible space flight  
*Period* *Obligations*  
02/12/79-06/11/80 **FY81 \$870** **TOTAL \$29,927**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lord, A E MSFC/Schaefer, D A 31-Atmos Sci  
MSFC/Williams, J R

**NAS 9-15915** **Drexel University** **3830**  
Bone growth and alteration via endosseous implants  
*Period* *Obligations*  
07/01/79-12/31/81 **FY81 \$30,000** **TOTAL \$80,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kamel, I L JSC/Altchuler, S I 56-Medical Sciences

**NCC 1-33** **Drexel University** **3831**  
Infrared heterodyne observation of the stratosphere from balloon  
based platform  
*Period* *Obligations*  
01/09/80-01/08/82 **FY81** **TOTAL \$40,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Abbas, M M LARC/Allario, F 31-Atmos Sci  
House, F B LARC/Alvarez, J M

**NSG 1496** **Drexel University** **3832**  
Research on singular perturbation techniques for on-line optimal  
control  
*Period* *Obligations*  
02/01/78-12/31/81 **FY81 \$48,500** **TOTAL \$137,918**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Calise, A J LARC/Price, D B 41-Aero Engr

**NSG 1606** **Drexel University** **3833**  
Deformation characteristics and failure modes of notched graphite  
polyimide composites at room and elevated temperatures  
*Period* *Obligations*  
07/01/79-10/31/81 **FY81 \$39,600** **TOTAL \$114,900**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Awerbuch, J LARC/Poe, C C, Jr 47-Materials Engr  
Kamel, I LARC/Kennedy, J M

**NSG 2357** **Drexel University** **3834**  
Feasibility studies for light scattering experiments in space to  
determine the velocity relaxation of small particles in a fluid  
*Period* *Obligations*  
01/01/79-12/31/81 **FY81 \$78,000** **TOTAL \$126,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Acquista, C A ARC/Brooks, W F 13-Physics  
Narducci, L ARC/Lum, H

**NSG 3128** **Drexel University** **3835**  
Interface characterization of metal matrix composites  
*Period* *Obligations*  
10/01/76-10/31/80 **FY81** **TOTAL \$140,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Koczak, M J LERC/Grimes, H H 47-Materials Engr  
Lawley, A

**NSG 6007** **Drexel University** **3836**  
Electrochemical concentration cell ozonesonde performance tests  
*Period* *Obligations*  
05/01/76-12/31/81 **FY81 \$5,376** **TOTAL \$116,030**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Bandy, A R WFC/Holland, A C 31-Atmos Sci

**NSG 6035** **Drexel University** **3837**  
A study of optimal electrode preparation for the electrochemical  
concentration cell ozonesonde  
*Period* *Obligations*  
07/01/79-11/30/81 **FY81** **TOTAL \$72,600**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Thornton, D C WFC/Torres, A L 12-Chemistry

**NSG 7491** **Drexel University** **3838**  
Theory for nonlinear reaction-diffusion phenomena with applica-  
tion to free radical recombination IV  
*Period* *Obligations*  
10/01/78-09/30/80 **FY81** **TOTAL \$70,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rosen, G H HQ-RT/Whiting, E E 13-Physics

**NCC 6-3214** **Indiana University of Pennsylvania** **3839**  
Redesign of the photomultiplier tube power supply for the airborne  
oceanographic lidar  
*Period* *Obligations*  
07/15/81-08/01/82 **FY81 \$4,723** **TOTAL \$4,723**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Berry, R E WFC/Hoge, F E 19-Phys Sci, NEC  
WFC/McGoogan, J T

**NAG 1-45** **Lafayette College** **3840**  
Ultrasonic ranging for the oculometer  
*Period* *Obligations*  
03/01/80-02/28/82 **FY81 \$12,850** **TOTAL \$25,850**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Guy, W J LARC/Gainer, P A 49-Engr, NEC

**NAG 3-135** **Lehigh University** **3841**  
Coupled wake-oscillator models for mistuned blade flutter  
*Period* *Obligations*  
12/08/80-09/07/83 **FY81 \$99,010** **TOTAL \$99,010**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Johnson, S H LERC/Lubomski, J F 46-Mech Engr  
Owczarek, J A

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**NAG 8-355** **Lehigh University** **3842**  
Interacting close binary systems  
*Period* *Obligations*  
06/27/80-06/30/82 **FY81** **TOTAL \$7,300**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
McCluskey, G E MSFC/Swearingen, J C 11-Astronomy  
Stengle, G A

**NAS 8-32951** **Lehigh University** **3843**  
Experiment for materials processing in space production of large  
particle size monodisperse latexes  
*Period* *Obligations*  
02/22/78-02/22/83 **FY81 \$50,000** **TOTAL \$411,315**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Van Derhoff, J W MSFC/Williams, J R 13-Physics  
MSFC/Kornfeld, D M

**NCA 2-380101** **Lehigh University** **3844**  
The infrared spectrum of gaseous GeH4  
*Period* *Obligations*  
11/01/80-10/31/81 **FY81 \$6,286** **TOTAL \$6,286**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lovejoy, R W ARC/Boese, R W 12-Chemistry

**NGR 39-007-011** **Lehigh University** **3845**  
Viscoelastic analysis of bonded joints and crack problems in  
orthotropic plates and shells  
*Period* *Obligations*  
11/30/64-10/31/82 **FY81 \$45,000** **TOTAL \$540,120**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Erdogan, F LARC/Crews, J H., Jr 21-Mathematics  
LARC/Everett, R A.

**NGR 39-007-043** **Lehigh University** **3846**  
Shock and thermal history of unusual iron meteorites  
*Period* *Obligations*  
05/24/71-03/31/82 **FY81 \$80,965** **TOTAL \$452,441**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Goldstein, J I HQ-SL/French, B M 32-Geological Sci  
HQ-SL/Quaide, W. L

**NGR 39-007-056** **Lehigh University** **3847**  
Lunar sample analysis  
*Period* *Obligations*  
01/12/71-07/31/82 **FY81** **TOTAL \$499,096**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Goldstein, J I JSC/Warner, J L 12-Chemistry

**NSG 3162** **Lehigh University** **3848**  
Blade flutter in compressors and fans numerical simulation of  
aerodynamic loading  
*Period* *Obligations*  
01/01/78-08/31/82 **FY81 \$11,869** **TOTAL \$67,499**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Rockwell, D O LERC/Batterton, P G 41-Aero Engr  
Johnson, S H LERC/Kurkov, A P

**NSG 3179** **Lehigh University** **3849**  
Time-dependent response of unidirectional and laminate com-  
posites under static and impact loading  
*Period* *Obligations*  
02/13/78-05/31/81 **FY81** **TOTAL \$157,315**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Sih, G C LERC/Chamis, C C 49-Engr, NEC  
LERC/Smith, G T

**NSG 5386** **Lehigh University** **3850**  
Mass flow and evolution in close binaries including simultaneous  
observations of X-ray binaries  
*Period* *Obligations*  
07/01/79-09/30/82 **FY81 \$11,300** **TOTAL \$33,300**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
McCluskey, G E GSFC/Boggess, A 11-Astronomy  
Kondo, Y

**NAS 5-23800** **Lincoln University - Pa** **3851**  
Medical information management system  
*Period* *Obligations*  
11/22/76-01/31/82 **FY81 \$53,000** **TOTAL \$181,336**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Frankowsky, J W GSFC/Alterescu, S 56-Medical Sciences

**NCA 5-98** **Lincoln University - Pa** **3852**  
Introduction to aerospace engineering  
*Period* *Obligations*  
07/01/80-01/31/83 **FY81 \$75,000** **TOTAL \$105,300**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Miller, R H GSFC/Mundy, J R 49-Engr, NEC

**NAS 2-10521** **Pennsylvania State Univ - Hershey Med.** **3853**  
Angiotensin related changes in body hydration related changes  
in body hydration  
*Period* *Obligations*  
01/17/80-09/30/81 **FY81** **TOTAL \$15,006**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Severs, W B ARC/Ferandin, J 51-Biological Sci  
ARC/Polson, P

**NCC 2-127** **Pennsylvania State Univ - Hershey Med.** **3854**  
Effect of cerebrospinal fluid hormonal and ionic composition  
on salt/water metabolism  
*Period* *Obligations*  
03/01/81-02/28/82 **FY81 \$29,468** **TOTAL \$29,468**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Severs, W B ARC/Keil, L 51-Biological Sci

**NAG 1-4** **Pennsylvania State Univ - Univ Park** **3855**  
Free-field propagation of high intensity noise  
*Period* *Obligations*  
12/01/79-02/28/82 **FY81 \$39,545** **TOTAL \$79,545**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Daniel, O H LARC/Norum, T D 41-Aero Engr  
LARC/Seiner, J M

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NAG 1-73		Pennsylvania State Univ - Univ Park		3856
The spinning of light aircraft				
<i>Period</i>		<i>Obligations</i>		
06/01/80-12/31/81	FY81	TOTAL \$44,956		
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
McCormick, B W	LARC/Chambers, J R	41-Aero Engr		
	LARC/Johnson, J L			

NAG 1-216		Pennsylvania State Univ - Univ Park		3857	
Experimental study using near field acoustical holography of sound transmission through fuselage sidewall structures					
Period		Obligations			
09/15/81-01/14/82		FY81	\$25,000	TOTAL	\$25,000
Prin Invest	NASA Tech Officer		CASE Category		
Williams, E G	LARC/Stephens, D G		41-Aero Engr		

NAG 3-35	Pennsylvania State Univ - Univ Park	3858
Oxidation of liquid lubricants and its relationship to chemical changes during elastohydrodynamic and boundary lubrication		
<i>Period</i>	<i>Obligations</i>	
04/01/80-03/31/81	FY81	TOTAL \$47,566
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Klaus, E E	LERC/Loomis, W R	43-Chem Engr
Duda, J L	LERC/Slaney, H E	
Nagarajan, R		

NAG 3-68		Pennsylvania State Univ - Univ Park		3859
Ceramic materials for high-temperature pressure transducers				
Period		Obligations		
05/20/80-02/17/82	FY81	\$50,000	TOTAL	\$80,000
Prin Invest	NASA Tech Officer		CASE Category	
Bradt, R C	LERC/Barranger, J P	47-Materials Engr		

NAG 3-91		Pennsylvania State Univ - Univ Park		3860
The utilization of alternate fuels in diesel engines				
<i>Period</i>		<i>Obligations</i>		
09/01/80-08/30/82	FY81	\$73,914	TOTAL	\$151,349
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Lestz, S S	LERC/Skorobatchkyi, M		46-Mech Engr	

NAG 3-177		Pennsylvania State Univ - Univ Park		3861
Vapor phase crystal growth of silicon carbide				
Period		Obligations		
04/05/81-04/04/82		FY81	\$49,977	TOTAL \$49,977
Prin Invest		NASA Tech Officer		CASE Category
Spear, K E		LERC/Powell, J A		47-Materials Engr

NAG 3-190		Pennsylvania State Univ - Univ Park		3862
Structure of evaporating and combusting pressure atomized sprays				
Measurements and predictions				
Period		Obligations		
09/01/81-08/31/82	FY81	\$52,177	TOTAL	\$52,177
Prin Invest	NASA Tech Officer		CASE Category	
Faeth, G M	LERC/Tacina, R R		46-Mech Engr	

NAG 5-49		Pennsylvania State Univ - Univ Park		3863
Combined use of remote sensing and seismic observations to infer recent crust deformation, active faulting and stress fields				
Period		Obligations		
05/01/80-10/31/81	FY81	TOTAL \$40,000		
Prin Invest	NASA Tech Officer	CASE Category		
Alexander, S S	GSFC/Kouns, C W	32-Geological Sci		
Gold, D P				

NAG 5-60		Pennsylvania State Univ - Univ Park	3864
Ultraviolet study of peculiar white dwarfs			
Period		Obligations	
06/01/80-08/31/81	FY81		TOTAL \$4,866
Prin Invest	NASA Tech Officer		CASE Category
Wegner, G A	GSFC/Boggess, A		11-Astronomy

NAG 5-77		Pennsylvania State Univ - Univ Park		3865
Synthesis of regional crust and upper mantle structure from seismic and gravity data				
Period		Obligations		
06/15/80-12/14/81	FY81	TOTAL		\$40,000
Prin Invest	NASA Tech Officer	CASE Category		
Alexander, S S	GSFC/Kouns, C W	32-Geological Sci		
Lavin, P M				

NAG 5-100		Pennsylvania State Univ - Univ Park		3866
High angular resolution X-ray and X-ray ultraviolet astronomy observations				
Period		Obligations		
10/01/80-09/30/82		FY81	\$432,807	TOTAL \$432,807
Prin Invest		NASA Tech Officer		. CASE Category
Garmire, G P		GSFC/Guidotti, J G		11-Astronomy
		HQ-SC/Holt, S S		

<b>NAG 5-184</b>	<b>Pennsylvania State Univ - Univ Park</b>	<b>3867</b>
<b>Development of an interactive method for remote determination of surface moisture patterns</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/81-05/31/82</b>	<b>FY81 \$44,159</b>	<b>TOTAL \$44,159</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Carlson, T N</b>	<b>GSFC/Schmugge, T J</b>	<b>39-Env Sci, NEC</b>
	<b>GSFC/Choudhury, B J</b>	

NAG 5-201		Pennsylvania State Univ - Univ Park		3868
Wind-wind interactions in selective binaries				
Period		Obligations		
09/01/81-03/31/82	FY81	\$6,000	TOTAL \$6,000	
Prin Invest	NASA Tech Officer		CASE Category	
Auer, L H	GSFC/Boggett, A		11-Astronomy	

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**NAG 6-7**      **Pennsylvania State Univ - Univ Park**      **3869**  
Investigate the influence of auroral energetic and electrodynamic coupling on middle atmosphere parameters

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$62,484	TOTAL \$117,484
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mitchell, J D	WFC/Early, L J	19-Phys Sci, NEC
Maynard, N C		
Goldberg, R A		

**NAGW 108**      **Pennsylvania State Univ - Univ Park**      **3870**  
Support of research in X-ray astronomy

<i>Period</i>	<i>Obligations</i>	
11/01/80-05/31/82	FY81 \$40,974	TOTAL \$40,974
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Garmire, G	HQ-SC/Kaluzienski, L J	11-Astronomy

**NAGW 127**      **Pennsylvania State Univ - Univ Park**      **3871**  
Collisionally induced sharp features in the vibration-rotation spectrum of HO

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$29,378	TOTAL \$29,378
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Herman, R M	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NAS 5-25667**      **Pennsylvania State Univ - Univ Park**      **3872**  
Development and evaluation of remote sensing techniques for soil surveys

<i>Period</i>	<i>Obligations</i>	
05/21/79-12/30/81	FY81	TOTAL \$9,993
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Petersen, G W	GSFC/Irons, J	39-Env Sci, NEC

**NAS 5-26215**      **Pennsylvania State Univ - Univ Park**      **3873**  
Chemical analysis of vegetation samples

<i>Period</i>	<i>Obligations</i>	
07/11/80-07/11/81	FY81	TOTAL \$26,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Smith, C B	GSFC/Labovitz, M L	32-Geological Sci
Baker, D E	GSFC/Masuoka, E J	

**NAS 5-26323**      **Pennsylvania State Univ - Univ Park**      **3874**  
Remote sensing data analysis support

<i>Period</i>	<i>Obligations</i>	
09/16/80-09/15/82	FY81	TOTAL \$40,737
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Turner, B J	GSFC/Irons, J R	99-Multi-Discip

**NAS 5-26456**      **Pennsylvania State Univ - Univ Park**      **3875**  
Interactive initialization of heat flux parameters for numerical models using satellite temperature

<i>Period</i>	<i>Obligations</i>	
03/10/81-05/09/82	FY81 \$35,682	TOTAL \$35,682
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Carlson, T N	GSFC/Oseroff, H	31-Atmos Sci

**NAS 5-26468**      **Pennsylvania State Univ - Univ Park**      **3876**  
Develop/implement a data management system for use with a LANDSAT-based information system

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$89,323	TOTAL \$89,323
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Turner, B J	GSFC/Dottavio, C L	99-Multi-Discip
	GSFC/Williams, D L	

**NAS 5-26545**      **Pennsylvania State Univ - Univ Park**      **3877**  
Study of solar flux and absorption

<i>Period</i>	<i>Obligations</i>	
05/22/81-09/30/81	FY81 \$3,000	TOTAL \$3,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nesbit, J F	GSFC/Reed, E I	31-Atmos Sci

**NAS 5-26612**      **Pennsylvania State Univ - Univ Park**      **3878**  
Delineation of soil temperature regimes from heat capacity mapping mission (HCMM) data

<i>Period</i>	<i>Obligations</i>	
12/02/81-11/06/82	FY81 \$39,479	TOTAL \$39,479
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Petersen, G W	GSFC/Oseroff, H	32-Geological Sci

**NAS 5-26652**      **Pennsylvania State Univ - Univ Park**      **3879**  
Remote sensing data analysis support

<i>Period</i>	<i>Obligations</i>	
08/19/81-08/18/82	FY81 \$11,999	TOTAL \$11,999
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Turner, B	GSFC/Labovitz, M	99-Multi-Discip

**NAS 6-2726**      **Pennsylvania State Univ - Univ Park**      **3880**  
Stratosphere and mesosphere structure and circulation studies

<i>Period</i>	<i>Obligations</i>	
03/04/76-01/31/82	FY81 \$35,986	TOTAL \$158,219
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Olivero, J	WFC/Duke, J R	31-Atmos Sci
	WFC/Schmidlin, F J	

**NAS 8-33794**      **Pennsylvania State Univ - Univ Park**      **3881**  
Utilization of satellite data and dynamics in understanding global weather phenomena

<i>Period</i>	<i>Obligations</i>	
08/15/80-08/15/82	FY81 \$88,000	TOTAL \$168,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clark, J H	MSFC/Kaufman, J W	31-Atmos Sci
Dutton, J A	MSFC/Fichtl, G H	

**NAS 8-33797**      **Pennsylvania State Univ - Univ Park**      **3882**  
Application of satellite data to study effect of latent heat release on cyclone

<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY81 \$67,900	TOTAL \$131,799
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clark, J H	MSFC/Fichtl, G H	31-Atmos Sci
	MSFC/Kaufman, J W	



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**NAS 8-34535**      **Pennsylvania State Univ - Univ Park**      **3883**  
Study of pump cavitation damage  
*Period*      *Obligations*  
09/28/81-02/27/83      FY81 \$25,000      TOTAL \$25,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Billet, M L      MSFC/Pitsenberger, F D      46-Mech Engr

**NAS 9-15566**      **Pennsylvania State Univ - Univ Park**      **3884**  
Purification and cultivation of human pituitary growth hormone secreting cells  
*Period*      *Obligations*  
05/01/78-12/01/81      FY81 \$30,000      TOTAL \$265,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hymer, W C      JSC/Morrison, D R      51-Biological Sci

**NAS 9-15584**      **Pennsylvania State Univ - Univ Park**      **3885**  
Kidney cell electrophoresis  
*Period*      *Obligations*  
09/01/81-12/31/82      FY81 \$100,000      TOTAL \$224,779  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Odd, P T      JSC/Morrison, D      51-Biological Sci

**NCA 2-589001**      **Pennsylvania State Univ - Univ Park**      **3886**  
Modeling of African dust  
*Period*      *Obligations*  
09/01/80-08/31/82      FY81      TOTAL \$18,325  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Anthes, R A      ARC/Toon, O B      32-Geological Sci

**NCA 2-589101**      **Pennsylvania State Univ - Univ Park**      **3887**  
Physiological studies of two growth hormone secreting cell types and characterization of their secretions  
*Period*      *Obligations*  
05/01/81-04/30/83      FY81 \$30,000      TOTAL \$30,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hymer, W      ARC/Grindeland, R      51-Biological Sci

**NCC 3-9**      **Pennsylvania State Univ - Univ Park**      **3888**  
Interdisciplinary collaboration on tribology  
*Period*      *Obligations*  
05/19/80-06/29/82      FY81 \$50,180      TOTAL \$74,439  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Klaus, E E      LERC/Loomis, W R      46-Mech Engr  
Duda, J L      LERC/Wedeven, L D  
Nagarajan, R

**NCC 5-12**      **Pennsylvania State Univ - Univ Park**      **3889**  
Research of combined use of remote sensing and seismic observations to infer geologically recent crust deformation  
*Period*      *Obligations*  
05/01/79-04/30/80      FY81      TOTAL \$50,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Alexander, S S      GSFC/Allenby, R J      32-Geological Sci  
Gold, D P

**NCC 5-19**      **Pennsylvania State Univ - Univ Park**      **3890**  
Synthesis of regional crust and upper mantle structure from seismic and gravity data  
*Period*      *Obligations*  
06/15/79-12/31/80      FY81      TOTAL \$52,800  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Alexander, S S      GSFC/Allenby, R J      32-Geological Sci

**NGL 39-009-003**      **Pennsylvania State Univ - Univ Park**      **3891**  
Research on electron densities in upper ionosphere, including studies of rocket and separating capsule experimental techniques  
*Period*      *Obligations*  
03/01/61-10/31/82      FY81 \$105,000      TOTAL \$2,537,661  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Nisbet, J S      HQ-SC/Mayr, H G      13-Physics  
HQ-SC/Schmerling, E R

**NGL 39-009-010**      **Pennsylvania State Univ - Univ Park**      **3892**  
Research to establish criteria for recognition of ancient meteorite impact craters whose characteristic surface forms have been obliterated by erosion  
*Period*      *Obligations*  
08/08/63-12/31/80      FY81      TOTAL \$169,563  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gold, D P      HQ-SL/Quaide, W L      32-Geological Sci

**NGT 39-009-800**      **Pennsylvania State Univ - Univ Park**      **3893**  
Graduate student researchers program  
*Period*      *Obligations*  
09/01/80-08/31/82      FY81 \$10,600      TOTAL \$21,200  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Nisbet, J S      HQ-LC/Carter, C H      13-Physics

**NGT 39-009-801**      **Pennsylvania State Univ - Univ Park**      **3894**  
Graduate student researchers program  
*Period*      *Obligations*  
09/01/80-08/31/81      FY81      TOTAL \$11,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Anthes, R A      ARC/Toon, O B      19-Phys Sci, NEC

**NGT 39-009-802**      **Pennsylvania State Univ - Univ Park**      **3895**  
Training program in computational fluid dynamics  
*Period*      *Obligations*  
01/01/81-12/31/81      FY81 \$75,000      TOTAL \$75,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Lakshminarayana, B      HQ-RT/Graves, R A      41-Aero Engr

**NGT 39-009-803**      **Pennsylvania State Univ - Univ Park**      **3896**  
Graduate student researchers program  
*Period*      *Obligations*  
09/01/81-08/31/82      FY81 \$12,550      TOTAL \$12,550  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gold, D P      HQ-LC/Carter, C H      32-Geological Sci

**NASA'S UNIVERSITY PROGRAM**  
**PENNSYLVANIA (Continued)**

**NSG 1308**      **Pennsylvania State Univ - Univ Park**      **3897**  
Research in propellers for general aviation aircraft  
*Period*      *Obligations*  
07/01/76-04/30/80      **FY81**      **TOTAL: \$167,143**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
McCormick, B W      LARC/Fisher, B D      41-Aero Engr  
LARC/Hall, A W

**NSG 1387**      **Pennsylvania State Univ - Univ Park**      **3898**  
Growth, perfection, and characterization of triglycine-sulfate A model for zero gravity growth  
*Period*      *Obligations*  
03/01/77-08/31/80      **FY81**      **TOTAL: \$106,000**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
White, W B      LARC/Fripp, A L      47-Materials Engr  
Spear, K E      LARC/Crouch, R K  
Vedam, K

**NSG 1580**      **Pennsylvania State Univ - Univ Park**      **3899**  
Broadbank jet noise amplification by a pure tone excitation  
*Period*      *Obligations*  
12/01/78-05/31/82      **FY81 \$40,412**      **TOTAL \$115,462**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Morris, P J      LARC/Gatski, T B      41-Aero Engr  
LARC/Hardin, J C

**NSG 3012**      **Pennsylvania State Univ - Univ Park**      **3900**  
Compressor or fan rotor wake characteristics  
*Period*      *Obligations*  
06/28/74-03/26/82      **FY81**      **TOTAL \$308,510**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Lakshminarayana, B      LERC/Shaw, L M      41-Aero Engr

**NSG 3032**      **Pennsylvania State Univ - Univ Park**      **3901**  
Blade end wall flows in compressors  
*Period*      *Obligations*  
09/01/74-08/29/81      **FY81**      **TOTAL \$50,801**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Lakshminarayana, B      LERC/Sockol, P M      41-Aero Engr

**NSG 3166**      **Pennsylvania State Univ - Univ Park**      **3902**  
Mapping of electrical potential distributions with charged particle beams  
*Period*      *Obligations*  
11/01/77-02/28/82      **FY81**      **TOTAL \$92,813**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Robinson, J W      LERC/Staskus, J V      13-Physics  
LERC/Stevens, N J

**NSG 3212**      **Pennsylvania State Univ - Univ Park**      **3903**  
End wall flows in rotors and stators of a single stage compressor  
*Period*      *Obligations*  
08/01/78-11/07/81      **FY81 \$78,251**      **TOTAL: \$206,265**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Lakshminarayana, B      LERC/Sockol, P M      41-Aero Engr

**NSG 3264**      **Pennsylvania State Univ - Univ Park**      **3904**  
The boundary layer on compressor cascade blades  
*Period*      *Obligations*  
06/04/79-11/28/82      **FY81 \$155,715**      **TOTAL \$231,132**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Deutsch, S      LERC/Sanger, N L      41-Aero Engr  
Henderson, R

**NSG 3265**      **Pennsylvania State Univ - Univ Park**      **3905**  
The large scale structure of turbulence in a rotor wake  
*Period*      *Obligations*  
07/01/79-10/28/81      **FY81**      **TOTAL \$112,638**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Morris, P J      LERC/Englert, G W      41-Aero Engr

**NSG 3266**      **Pennsylvania State Univ - Univ Park**      **3906**  
Three dimensional flow field inside compressor rotor passages, including blade boundary layers  
*Period*      *Obligations*  
06/26/79-10/13/81      **FY81 \$87,571**      **TOTAL \$162,127**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Lakshminarayana, B      LERC/Sockol, P M      41-Aero Engr

**NSG 3301**      **Pennsylvania State Univ - Univ Park**      **3907**  
Mass analysis of neutral particles and ions released during electrical breakdowns on spacecraft surfaces  
*Period*      *Obligations*  
09/04/79-12/03/81      **FY81 \$20,000**      **TOTAL \$155,187**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Kendall, B R      LERC/Staskus, J V      13-Physics  
LERC/Stevens, N J

**NSG 3304**      **Pennsylvania State Univ - Univ Park**      **3908**  
A study of interactive aerolastic and aerodynamic problems relating to general aviation propellers  
*Period*      *Obligations*  
10/01/79-12/30/81      **FY81 \$60,356**      **TOTAL \$138,311**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
McCormick, B W      LERC/Mehmed, O      41-Aero Engr

**NSG 3306**      **Pennsylvania State Univ - Univ Park**      **3909**  
An investigation of air solubility in a jet fuel at high pressure  
*Period*      *Obligations*  
09/01/79-08/31/81      **FY81**      **TOTAL \$70,500**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Faeth, G M      LERC/Marner, C J      46-Mech Engr

**NSG 5185**      **Pennsylvania State Univ - Univ Park**      **3910**  
Research of the nature and subsurface character of lineaments in Pennsylvania  
*Period*      *Obligations*  
07/01/77-09/30/80      **FY81**      **TOTAL \$65,843**  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Alexander, S S      GSFC/Allenby, R J      32-Geological Sci  
Gold, D P

### NASA'S UNIVERSITY PROGRAM PENNSYLVANIA (Continued)

NSG 5205	Pennsylvania State Univ - Univ Park		3911
Utilization of satellite data in mesoscale models			
<i>Period</i>	<i>Obligations</i>		
09/01/77-01/31/82	FY81 \$52,100	TOTAL	\$170,932
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Anthes, R A	GSFC/Uccellini, L W	31-Atmos Sci	

<b>NSG 5212</b>	<b>Pennsylvania State Univ - Univ Park</b>	<b>3912</b>
<b>Study of high latitude thermospheric densities and flow patterns</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/77-12/31/81	FY81 \$25,000	TOTAL \$77,012
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nisbet, J S	GSFC/Spencer, N W	13-Physics
Bleuler, E		

NSG 5347		Pennsylvania State Univ - Univ Park		3913	
Satellite data and dynamic principles in understanding global weather phenomena					
Period		Obligations			
05/01/79-05/31/80		FY81		TOTAL \$58,407	
Prin Invest		NASA Tech Officer		CASE Category	
Clark, J H		GSFC/Greaves, J		31-Atmos Sci	
Dutton, J A					

NSG 6004		Pennsylvania State Univ - Univ Park		3914
Studies of mesospheric ionization				
<i>Period</i>		<i>Obligations</i>		
10/01/75-12/31/81		FY81 \$96,209	TOTAL \$274,664	
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Hale, L C	WFC/Early, L J		19-Phys Sci, NEC	
	WFC/Pless, R H			

NSG 7515	Pennsylvania State Univ - Univ Park		3915
Structure-function studies on thermophilic glutamine synthetase			
Period	Obligations		
10/01/78-11/30/80	FY81 \$3,500	TOTAL \$36,993	
Prn Invest	NASA Tech Officer	CASE Category	
Wedder, F C	HQ-SB/Geib, D S	12-Chemistry	

<b>NAGW 242</b>	<b>Temple University</b>	<b>3916</b>
The influence of varied gravito-inertial fields on the cardiac response of orb-weaving spiders		
<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$9,961	TOTAL \$9,961
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Finck, A	HQ-SB/Halstead, T W	51-Biological Sci

<b>NAS 9-14979</b>	<b>Temple University</b>	<b>3917</b>
Ultraviolet-radiation induced skin cancer in experimental animals		
<i>Period</i>	<i>Obligations</i>	
04/26/76-12/31/81	FY81 \$30,000	TOTAL \$349,993
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Urback, F	JSC/Nachtwey, D S	
		56-Medical Sciences

NAG 5-92		University of Pennsylvania	3918
Research relative to synthetic aperture radiometry			
<i>Period</i>		<i>Obligations</i>	
01/01/81-12/31/81	FY81		TOTAL \$11,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Kritikos, H N	GSFC/Levine, D M		45-Elec Engr

<b>NAG 8-346</b>	<b>University of Pennsylvania</b>	<b>3919</b>
Stellar envelopes of active close binaries to be observed under High Energy Astronomical Observatory-B guest investigator program		
<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/81	FY81	TOTAL \$7,373
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Koch, R H	MSFC/Jones, J B	11-Astronomy
Plavec, M J		

NAS 9-15531		University of Pennsylvania		3920	
Development phase for Spacelab experiment					
Period		Obligations			
03/01/78-09/30/83		FY81	\$102,716	TOTAL	\$480,490
Prin Invest		NASA Tech Officer		CASE Category	
Brown, A H		JSC/Peck, E E		59-Life Sci, NEC	

<b>NAS 9-16031</b>	<b>University of Pennsylvania</b>	<b>3921</b>
<b>Life Science Flight Experiment protein metabolism</b>		
<i>Period</i>	<i>Obligations</i>	
<b>01/17/80-01/31/82</b>	<b>FY81</b>	<b>TOTAL \$12,538</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Stein, T D</b>	<b>JSC/White, T T</b>	<b>59-Life Sci, NEC</b>

<b>NGR 39-010-149</b>	<b>University of Pennsylvania</b>	<b>3922</b>
<b>Plant morphogenesis under conditions of hypo and hypergravia</b>		
<i>Period</i>	<i>Obligations</i>	
09/01/73-03/31/82	FY81 \$30,466	TOTAL \$454,935
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brown, A H	HQ-SB/Halstead, T W	51-Biological Sci

NSG 3300		University of Pennsylvania		3923	
Development of new intercalated cathode materials in use in sodium batteries					
Period		Obligations			
10/01/79-12/14/81		FY81	\$58,400	TOTAL	\$127,975
Prin Invest		NASA Tech Officer		CASE Category	
Worrell, W L		LERC/Singer, J		19-Phys Sci, NEC	
Mehrotra, G					

<b>NSG 5296</b>	<b>University of Pennsylvania</b>	<b>3924</b>
<b>Ultraviolet spectroscopy of peculiar eclipsing binary stars</b>		
<i>Period</i>	<i>Obligations</i>	
08/01/78-06/30/81	FY81	TOTAL \$22,854
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Koch, R H	GSFC/Boggess, A	11-Astronomy
Pfeiffer, R J		
Williams, R E		

**NASA'S UNIVERSITY PROGRAM**  
**PENNSYLVANIA (Continued)**

**NAG 2-53**                      **University of Pittsburgh**                      **3925**  
A survey of nearby stars for the perturbative effects of extrasolar planetary systems  
*Period*                                      *Obligations*  
09/01/80-10/31/81                      FY81 \$56,165                      TOTAL \$77,225  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Gatewood, G D                      ARC/Black, D C                      11-Astronomy

**NAG 3-44**                      **University of Pittsburgh**                      **3926**  
Investigation into the role of NAC dependency on oxide and metal substrates in the initiation of hot corrosion  
*Period*                                      *Obligations*  
04/01/80-03/30/83                      FY81                      TOTAL \$59,970  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Birks, N                      LERC/Kohl, F J                      47-Materials Engr  
   LERC/Fielder, W L

**NAG 6-2**                      **University of Pittsburgh**                      **3927**  
Studies of the physics and chemistry of the terrestrial atmosphere  
*Period*                                      *Obligations*  
10/01/79-09/30/81                      FY81 \$172,843                      TOTAL \$328,074  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Zipf, E C                      WFC/Early, L J                      19-Phys Sci, NEC  
   WFC/Pless, R H

**NAS 3-22662**                      **University of Pittsburgh**                      **3928**  
Presentation of symposia and reports in advanced electrical propulsion  
*Period*                                      *Obligations*  
09/23/80-08/24/82                      FY81 \$76,099                      TOTAL \$130,846  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
McWilliams, P A                      LERC/Kerslake, W R                      42-Astro Engr

**NAS 5-25013**                      **University of Pittsburgh**                      **3929**  
Study of infrared detection by intracavity upconversion  
*Period*                                      *Obligations*  
05/09/78-05/31/82                      FY81 \$50,000                      TOTAL \$196,504  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Falk, J                      GSFC/Kostuk, T                      13-Physics  
   GSFC/Ogilvie, K W

**NASW 3042**                      **University of Pittsburgh**                      **3930**  
Operation of an industrial applications center  
*Period*                                      *Obligations*  
06/29/77-03/31/80                      FY81                      TOTAL \$835,851  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Unavailable                      HQ-ET/Bivins, R G                      99-Multi-Discip

**NASW 3403**                      **University of Pittsburgh**                      **3931**  
Operation of a NASA industrial application center (IAC)  
*Period*                                      *Obligations*  
04/01/80-03/31/82                      FY81 \$190,000                      TOTAL \$524,029  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
McWilliams, P A                      HQ-ET/Ault, L                      22-Computer Science  
   HQ-ET/Bivins, R G

**NCA 2-592901**                      **University of Pittsburgh**                      **3932**  
Vestibular nuclei neuron activity in freely moving cats  
*Period*                                      *Obligations*  
03/01/79-03/31/82                      FY81 \$9,000                      TOTAL \$26,715  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Tomko, D L                      ARC/Daunton, N G                      51-Biological Sci

**NGL 39-011-013**                      **University of Pittsburgh**                      **3933**  
Investigation of airglow excitation mechanisms using atomic beam techniques  
*Period*                                      *Obligations*  
04/26/65-03/31/82                      FY81 \$72,640                      TOTAL \$781,370  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Fite, W L                      HQ-SL/Murphy, R E                      31-Atmos Sci  
   HQ-SL/Brunk, W E

**NGL 39-011-030**                      **University of Pittsburgh**                      **3934**  
Studies of excitation and collision deactivation of measurable A3 state of nitrogen in the aurora and day airglow  
*Period*                                      *Obligations*  
05/07/65-04/30/82                      FY81 \$70,000                      TOTAL \$1,154,886  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Zipf, E C                      HQ-SL/Murphy, R E                      31-Atmos Sci  
   HQ-SL/Brunk, W E

**NGL 39-011-085**                      **University of Pittsburgh**                      **3935**  
Studies relating to surfaces of Moon and planets  
*Period*                                      *Obligations*  
03/17/69-03/31/80                      FY81                      TOTAL \$339,299  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Cassidy, W A                      HQ-SL/Quaide, W L                      32-Geological Sci  
Hapke, B W

**NGR 39-011-137**                      **University of Pittsburgh**                      **3936**  
Dissociative recombination coefficients for planetary ionospheric ions  
*Period*                                      *Obligations*  
07/28/71-05/31/82                      FY81 \$45,313                      TOTAL \$344,564  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Biondi, M A                      HQ-SL/Murphy, R E                      31-Atmos Sci  
   HQ-SL/Brunk, W E

**NGR 39-011-161**                      **University of Pittsburgh**                      **3937**  
Laboratory studies of kinetics of tropospheric and stratospheric aircraft pollutant reactions using atomic and molecular resonance fluorescence detection  
*Period*                                      *Obligations*  
06/03/73-02/28/82                      FY81 \$70,268                      TOTAL \$466,306  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Kaufman, F                      HQ-EB/Watson, R T                      12-Chemistry  
   HQ-EB/Chan, K R

# NASA'S UNIVERSITY PROGRAM PENNSYLVANIA (Continued)

**NSG 2407** University of Pittsburgh 3938  
Theoretical studies of the electronic structure of small metal clusters

Period	Obligations	
10/01/79-03/31/82	FY81 \$30,000	TOTAL \$68,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jordan, K D	ARC/Cooper, D M	13-Physics

**NSG 3163** University of Pittsburgh 3939  
Determination of efficiencies, loss mechanisms and performance degradation factors in chopper controlled DC vehicle motors

Period	Obligations	
09/01/77-08/30/80	FY81	TOTAL \$140,112
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hamilton, H B	LERC/McBrien, E F	45-Elec Engr

**NSG 3214** University of Pittsburgh 3940  
Investigation of initiation stage of hot corrosion in Nu-base alloys

Period	Obligations	
09/01/78-12/31/81	FY81	TOTAL \$59,996
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Meier, G H	LERC/Kohl, F J	47-Materials Engr

**NSG 5270** University of Pittsburgh 3941  
Lithological characterization of crystalline basement rock provinces in the United States

Period	Obligations	
04/15/78-07/14/82	FY81 \$20,001	TOTAL \$64,756
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lidiak, E G	GSFC/Kouns, C W	32-Geological Sci

**NSG 5362** University of Pittsburgh 3942  
Measurement of the far ultraviolet spectral reflections of selected lunar areas

Period	Obligations	
05/09/79-06/08/81	FY81	TOTAL \$19,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hapke, B	GSFC/Bogges, A	11-Astronomy

**NSG 7147** University of Pittsburgh 3943  
Photometric analyses of Mariner 10 images of Venus and Mercury

Period	Obligations	
06/23/75-11/30/81	FY81 \$30,558	TOTAL \$180,919
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hapke, B	HQ-SL/Boyce, J M	11-Astronomy
	HQ-SL/Holt, H E	

**NSG 7631** University of Pittsburgh 3944  
Measurement of reflectivities of rocks, minerals and glasses in the vacuum ultraviolet

Period	Obligations	
06/01/79-02/28/82	FY81 \$20,183	TOTAL \$116,480
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hapke, B	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NAG 5-205** Villanova University 3945  
Ultraviolet studies of nova-like variables

Period	Obligations	
10/01/81-05/31/82	FY81 \$6,500	TOTAL \$6,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Guinan, E F	GSFC/Bogges, A	11-Astronomy
Sion, E M		

**NAS 1-16095** Villanova University 3946  
Gust response of wide-bodied jet aircraft including autopilot studies

Period	Obligations	
01/29/80-10/14/81	FY81	TOTAL \$35,563
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Goldberg, J H	LARC/Crabill, N L	41-Aero Engr
	LARC/Houbolt, J C	

**NSG 5375** Villanova University 3947  
Ultraviolet observations of hot white dwarfs in binary systems

Period	Obligations	
07/01/79-12/31/81	FY81	TOTAL \$9,351
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Guinan, E F	GSFC/Bogges, A	11-Astronomy
Sion, E M		

## RHODE ISLAND

**NAG 5-50** Brown University 3948  
Study of the effects of continental wakes

Period	Obligations	
06/01/80-05/31/81	FY81	TOTAL \$39,311
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Parmentier, E M	GSFC/Holweck, E C	32-Geological Sci
Forsyth, D W	GSFC/Mead, G D	

**NAGW 28** Brown University 3949  
Remote sensing information applied to geological studies of planets

Period	Obligations	
02/14/80-02/13/82	FY81 \$95,000	TOTAL \$208,691
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NAGW 137** Brown University 3950  
Geologic processes on the Galilean satellites impact cratering, volcanism and tectonism

Period	Obligations	
03/01/81-02/28/82	FY81 \$79,997	TOTAL \$79,997
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Boyce, J M	42-Astro Engr
	HQ-SL/Holt, H E	

**NASA'S UNIVERSITY PROGRAM**  
**RHODE ISLAND (Continued)**

**NAS 5-26138** **Brown University** **3951**  
 Electromagnetic deep-probing of the Earth's interior from artificial satellites Constraints on the regional emplacement of crustal resources

<i>Period</i>	<i>Obligations</i>	
06/05/80-10/05/82	FY81 \$35,500	TOTAL \$84,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hermance, J F	GSFC/Oseorff, H	31-Atmos Sci

**NAS 5-26729** **Brown University** **3952**  
 Utilization of (HCM) heat capacity mapping mission thermal data for the discrimination of volcanic and eolian geological units

<i>Period</i>	<i>Obligations</i>	
09/21/81-01/31/84	FY81 \$65,000	TOTAL \$65,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	GSFC/Broderick, J C	32-Geological Sci
Mouginis-mark, P		

**NASW 3285** **Brown University** **3953**  
 Support for a regional planetary image facility

<i>Period</i>	<i>Obligations</i>	
10/01/78-01/31/80	FY81	TOTAL \$44,081
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Dwornik, S E	32-Geological Sci
	HQ-SL/Boyce, J M	

**NASW 3508** **Brown University** **3954**  
 Support Brown University regional planetary data center

<i>Period</i>	<i>Obligations</i>	
04/14/81-10/31/81	FY81 \$15,000	TOTAL \$15,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

**NGR 40-002-088** **Brown University** **3955**  
 Analysis of Martian geologic features of Earth analogs

<i>Period</i>	<i>Obligations</i>	
10/20/69-11/30/81	FY81 \$105,000	TOTAL \$793,336
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

**NGR 40-002-116** **Brown University** **3956**  
 Lunar basins processes and structure

<i>Period</i>	<i>Obligations</i>	
02/20/73-01/31/82	FY81 \$75,000	TOTAL \$672,839
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

**NGT 40-002-800** **Brown University** **3957**  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$12,485	TOTAL \$23,070
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Doepfner, T W, Jr	HQ-LC/Carter, C H	41-Aero Engr

**NSG 1617** **Brown University** **3958**  
 Analytical and numerical gas dynamics

<i>Period</i>	<i>Obligations</i>	
06/01/79-05/31/82	FY81 \$57,792	TOTAL \$119,527
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sirovich, L	LARC/Townsend, J C	41-Aero Engr
	LARC/Miller, D S	

**NSG 7569** **Brown University** **3959**  
 Analysis of rocks and substrate as revealed in Viking Lander images

<i>Period</i>	<i>Obligations</i>	
04/01/79-09/30/81	FY81 \$85,000	TOTAL \$223,700
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Quaide, W L	

**NSG 7570** **Brown University** **3960**  
 Surface processes on Mars and its satellites with emphasis on cratering, volcanism and the evolution of Valles Marineris

<i>Period</i>	<i>Obligations</i>	
04/01/79-10/31/81	FY81 \$80,000	TOTAL \$226,387
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Head, J W	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

**NSG 7589** **Brown University** **3961**  
 Experimental investigation of basalt-C-O-H-S gas equilibria and fumarolic alteration on Mars

<i>Period</i>	<i>Obligations</i>	
03/01/79-10/31/81	FY81 \$44,000	TOTAL \$109,628
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rutherford, M J	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/Boyce, J M	

**NSG 7605** **Brown University** **3962**  
 Endogenic processes affect in the surfaces of Ganymede and Callisto

<i>Period</i>	<i>Obligations</i>	
05/01/79-03/31/82	FY81 \$42,450	TOTAL \$124,186
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Parmentier, E M	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NAG 1-173** **University of Rhode Island** **3963**  
 Development of robots and applications to industrial processes

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$25,000	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dally, J W	LARC/Meintel, A J	49-Engr, NEC
Kelley, R	LARC/Woolley, C T	
Birk, J		

### NASA'S UNIVERSITY PROGRAM RHODE ISLAND ( Continued)

<b>NAGW 206</b>	<b>University of Rhode Island</b>	<b>3964</b>
The Archaean environment Stable isotope studies on Archaean stromatolites		
<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/83	FY81 \$42,000	TOTAL \$42,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Abell, P I	HQ-SB/Devincenzi, D L	32-Geological Sci

<b>NSG 1495</b>	<b>University of Rhode Island</b>	<b>3965</b>
<b>Use of numerical continental shelf circulation and pollutant transport models for analysis of remotely sensed data</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/01/78-07/31/81</b>	<b>FY81</b>	<b>TOTAL \$119,585</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Spaulding, M L</b>	<b>LARC/Campbell, J W</b>	<b>33-Oceanography</b>

<b>NSG 7414</b>	<b>University of Rhode Island</b>	<b>3966</b>
<b>Paleoflow processes and formation of Martian channels</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/77-05/30/82	FY81 \$27,176	TOTAL \$90,520
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Boothroyd, J C	HQ-SL/Boyce, J M	32-Geological Sci
	HQ-SL/Holt, H E	

## SOUTH CAROLINA

<b>NSG 5420</b>	<b>Citadel Military College of S C</b>	<b>3967</b>
<b>Observations of spectrum variability of hot peculiar A stars</b>		
<i>Period</i>	<i>Obligations</i>	
11/01/79-06/30/81	FY81	TOTAL \$10,590
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Adelman, S J	GSFC/Boggess, A	11-Astronomy
Shore, S N		

NAG 1-81		Clemson University - Clemson		3968
Integrated controls concepts				
<i>Period</i>		<i>Obligations</i>		
10/01/80-12/31/81		FY81	\$7,401	TOTAL \$39,660
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Fennell, R E		LARC/Lallman, F J		21-Mathematics
		LARC/Murphy, P C		

<b>NAG 3-116</b>	<b>Clemson University - Clemson</b>	<b>3969</b>
<b>Research and development of an artificial finger joint grommet using ion thruster technology</b>		
<i>Period</i>		<i>Obligations</i>
<b>10/01/80-06/01/82</b>	<b>FY81</b>	<b>TOTAL \$51,811</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Vanrecum, A F</b>	<b>LERC/Kerslake, W R</b>	
		<b>56-Medical Sciences</b>

<b>NAS 8-33524</b> Hot tensile tests of Inconel 718 microfissuring of EB welds in Inconel 718		<b>Clemson University - Clemson</b> Period	<b>3970</b> Obligations
02/29/80-12/31/81	FY81	TOTAL	\$14,958
Prin Invest	NASA Tech Officer	CASE Category	
Thompson, R G	MSFC/Nunes, A C	47-Materials Engr	
	MSFC/Strong, J S		

NAS 8-33805		Clemson University - Clemson		3971
Analysis of hot tensile test data for IN-718				
<i>Period</i>		<i>Obligations</i>		
02/18/81-08/31/81	FY81	\$6,852	TOTAL	\$6,852
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Thompson, R G	MSFC/Nunes, A	C	47-Materials Engr	
	MSFC/Strong, J	S		

NSG 1297	Clemson University - Clemson	3972
Crack growth in bonded isotropic and orthotropic elastic half-planes		
<i>Period</i>	<i>Obligations</i>	
04/01/76-10/15/81	FY81	TOTAL \$205,833
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Goree, J G	LARC/Poe, C C, Jr	46-Mech Engr
	LARC/Kennedy, J M	

<b>NSG 3225</b>	<b>Clemson University - Clemson</b>	<b>3973</b>
<b>Development of a percutaneous implant using ion-beam sputtering technique</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/15/78-09/14/80</b>	<b>FY81 \$965</b>	<b>TOTAL \$17,510</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Park, J B</b>	<b>LERC/Weigand, A J</b>	
		<b>56-Medical Sciences</b>

NSG 5349		Clemson University - Clemson		3974
Forecasting tropical cyclone recurvature with upper tropospheric winds				
Period		Obligations		
05/01/79-04/30/82		FY81 \$36,000	TOTAL	\$95,602
Prin Invest		NASA Tech Officer		CASE Category
Gentry, R C		GSFC/Rodgers, E B		31-Atmos Sci

NSG 5350		Clemson University - Clemson	3975
Research of the genises of tornadoes associated with hurricanes			
Period		Obligations	
05/01/79-04/30/82	FY81		TOTAL \$67,993
Prin Invest	NASA Tech Officer		CASE Category
Gentry, R C	GSFC/Wexler, R		31-Atmos Sci

<b>NAG 5-97</b>	<b>Furman University</b>	<b>3976</b>
<b>Enhancement of a computer model describing the deposition of auroral electron energy</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/15/80-01/14/82</b>	<b>FY81 \$7,039</b>	<b>TOTAL \$10,377</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Porter, H S</b>	<b>GSFC/Mayr, H G</b>	<b>31-Atmos Sci</b>

# NASA'S UNIVERSITY PROGRAM SOUTH CAROLINA (Continued)

**NAG 3-75**                      **University of South Carolina**                      **3977**  
Automated data analysis system in laser speckle interferometry  
and boundary integral equation methods  
*Period*                                      *Obligations*  
06/06/80-07/09/81                      FY81                      TOTAL \$35,000  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Ranson, W F                      LARC/Decker, A J                      46-Mech Engr

**NAS13-144**                      **University of South Carolina**                      **3978**  
Evaluation of domestic information system for state government  
application  
*Period*                                      *Obligations*  
03/28/80-09/30/81                      FY81 \$1,100                      TOTAL \$36,100  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Cowen, D J                      GSFC/Dalton, J                      32-Geological Sci

**NSG 7096**                      **University of South Carolina**                      **3979**  
A model for the formation of protocells from glycine-rich  
proteimoids  
*Period*                                      *Obligations*  
10/08/74-08/31/80                      FY81                      TOTAL \$138,037  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Rohlfing, D L                      HQ-SB/Devincenzi, D L                      51-Biological Sci

**NSG 7504**                      **University of South Carolina**                      **3980**  
Application of LANDSAT data in South Carolina  
*Period*                                      *Obligations*  
12/01/78-11/30/84                      FY81 \$200,000                      TOTAL \$500,000  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Roberson, R E                      HQ-ET/Vitale, J A                      39-Env Sci, NEC

## SOUTH DAKOTA

**NAS 9-16028**                      **South Dakota School of Mines & Tech**                      **3981**  
Life science flight experiments    Determination of segmented fluid  
shifts in humans which accompany the onset of weightlessness  
*Period*                                      *Obligations*  
01/17/80-01/31/82                      FY81 \$3,573                      TOTAL \$22,908  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Gowen, R J                      JSC/French, B                      59-Life Sci, NEC

**NAG 5-37**                      **South Dakota State University**                      **3982**  
Irrigation management with remote sensing  
*Period*                                      *Obligations*  
04/01/80-09/30/81                      FY81                      TOTAL \$29,945  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Harlan, C                      GSFC/Salomonson, V V                      55-Agriculture Sci

**NGL 42-003-007**                      **South Dakota State University**                      **3983**  
Remote sensing of soils, land forms, and land use in the northern  
Great Plains in preparation for ERTS applications  
*Period*                                      *Obligations*  
07/27/70-06/30/83                      FY81                      TOTAL \$1,650,000  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Myers, V I                      HQ-ET/Vitale, J A                      39-Env Sci, NEC

**NSG 5396**                      **South Dakota State University**                      **3984**  
Advanced microwave soil moisture studies  
*Period*                                      *Obligations*  
07/01/79-04/30/82                      FY81 \$75,243                      TOTAL \$166,396  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Harlan, J C                      GSFC/Schmugge, T J                      39-Env Sci, NEC  
Myers, V I                      GSFC/O'neill, P

## TENNESSEE

**NAG 8-10**                      **Fisk University**                      **3985**  
The influence of defects and impurities on the electrical and optical  
properties of pyroelectric crystals  
*Period*                                      *Obligations*  
05/01/81-03/15/82                      FY81 \$53,114                      TOTAL \$53,114  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Springer, J M                      MSFC/Kroes, R L                      13-Physics  
MSFC/Kent, M I

**NSG 8060**                      **Fisk University**                      **3986**  
Optical characterization of zero-gravity grown crystals  
*Period*                                      *Obligations*  
04/17/78-02/16/82                      FY81 \$54,262                      TOTAL \$218,261  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Silberman, E                      MSFC/Kroes, R L                      13-Physics  
MSFC/Kent, M I

**NAS 5-23801**                      **Meharry Medical College**                      **3987**  
Investigation of medical information management system  
application in a complex health care facility  
*Period*                                      *Obligations*  
12/07/76-04/05/82                      FY81 \$55,000                      TOTAL \$165,564  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Braun, G                      GSFC/Alterescu, S                      56-Medical Sciences

**NAS13-171**                      **Middle Tennessee State University**                      **3988**  
Develop and conduct remote sensing short courses and seminars  
*Period*                                      *Obligations*  
03/12/81-03/11/83                      FY81 \$50,000                      TOTAL \$50,000  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Fullerton, R O                      NSTL/Atwell, B H                      32-Geological Sci



### NASA'S UNIVERSITY PROGRAM TENNESSEE (Continued)

<b>NAG 3-125</b>	<b>Tennessee State University</b>	<b>3989</b>
Investigation of relationships among machinability, wear and cavitation erosion of materials		
<i>Period</i>	<i>Obligations</i>	
11/03/80-11/02/81	FY81 \$40,132	TOTAL \$40,132
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chaudhuri, D K	LERC/Young, S G	47-Materials Engr

<b>NGT 43-014-750</b>	<b>Tennessee State University</b>	<b>3990</b>
<b>Training of undergraduate students in sciences and engineering</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/75-05/31/82</b>	<b>FY81</b>	<b>TOTAL \$86,750</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Malkani, M J</b>	<b>HQ-LC/Pohly, J G</b>	<b>49-Engr, NEC</b>
	<b>HO-U/Jenkins, H G</b>	

NAG 8-7		Tennessee Technological University		3991
Evaluation of a wind-wheel electric-power generator				
<i>Period</i>		<i>Obligations</i>		
06/01/80-09/14/81		FY81	\$7,278	TOTAL \$17,865
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Swim, W B		MSFC/Kaufman, J W		46-Mech Engr
		MSFC/Smith, A D		

<b>NAG 1-32</b>	<b>University of Tennessee - Knoxville</b>	<b>3992</b>
<b>A tensor-product finite element algorithm for Navier-Stokes solutions at large Reynolds number</b>		
<i>Period</i>		<i>Obligations</i>
<b>02/01/80-06/30/81</b>	<b>FY81</b>	<b>TOTAL \$23,180</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Baker, A J</b>	<b>LARC/Smith, R E</b>	<b>21-Mathematics</b>
	<b>LARC/Shoosmith, J N</b>	

NAG 2-71		University of Tennessee - Knoxville		3993	
Three-dimensional boundary layer flow over transonic slotted wind tunnel wall with mass transfer					
Period		Obligations			
12/01/80-11/30/81		FY81	\$48,144	TOTAL	\$48,144
Prin Invest		NASA Tech Officer		CASE Category	
Wu, J M		ARC/Steinle, F W, Jr		41-Aero Engr	
Collins, F G		ARC/Daugherty, J C			

NAG 3-18		University of Tennessee - Knoxville		3994
A coordinate mapping procedure for the computation of variable duct acoustics				
<i>Period</i>		<i>Obligations</i>		
01/01/80-12/30/81	FY81	\$30,302	TOTAL	\$50,302
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
White, J W	LERC/Baumeister, K J		41-Aero Engr	
	LERC/Rice, E J			

<b>NAG 3-83</b>	<b>University of Tennessee - Knoxville</b>	<b>3995</b>
<b>Time dependent local heat transfer coefficient variations during the ice accretion process on aircraft surfaces</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/14/80-07/13/83</b>	<b>FY81</b>	<b>TOTAL \$68,972</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Keshock, E G</b>	<b>LERC/Shaw, R J</b>	<b>41-Aero Engr</b>

NAG 3-86		University of Tennessee - Knoxville		3996	
Aerodynamically forced vibration of radial flow components					
<i>Period</i>		<i>Obligations</i>			
07/14/80-09/30/82		FY81 \$25,999		TOTAL \$70,999	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Caruthers, J E		LERC/Rostafinski, W		41-Aero Engr	
Kurosaka, M					

<b>NAG 3-90</b>	<b>University of Tennessee - Knoxville</b>	<b>3997</b>
Scaling analysis of the ice accretion process for the purpose of establishing scaling criteria for experimental testing		
<i>Period</i>		<i>Obligations</i>
08/04/80-10/03/81	FY81	TOTAL \$41,860
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Keshock, E G	LERC/Shaw, R J	41-Aero Engr
Missimer, J R		

<b>NAGW 125</b>		<b>University of Tennessee - Knoxville</b>		<b>3998</b>
<b>Spectroscopy of methane for the atmospheres of the outer planets</b>				
<i>Period</i>		<i>Obligations</i>		
<b>03/01/81-02/29/82</b>		<b>FY81</b>	<b>\$40,000</b>	<b>TOTAL \$40,000</b>
<i>Prin</i>	<i>Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
<b>Fox, K</b>		<b>HQ-SL/Murphy, R E</b>		<b>11-Astronomy</b>
		<b>HO-SL/Brunk, W E</b>		

NAS 5-25428		University of Tennessee - Knoxville	3999
Development of theoretical molecular models for line positions and strengths of several methane bands			
Period		Obligations	
12/27/78-12/27/80	FY81	TOTAL	\$30,000
Prin Invest	NASA Tech Officer	CASE Category	
Fox, K	GSFC/Maguire, W C	13-Physics	
	GSFC/Kunde, V G		

<b>NAS 8-32031</b>		<b>University of Tennessee - Knoxville</b>		<b>4000</b>
<b>Field study of advection fog</b>				
<i>Period</i>		<i>Obligations</i>		
<b>09/01/76-01/18/81</b>	<b>FY81</b>	<b>TOTAL</b>	<b>\$114,985</b>	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>		
<b>Connett, J R</b>	<b>MSFC/Vaughan, O H</b>	<b>31-Atmos Sci</b>		
	<b>MSFC/Anderson, B J</b>			

<b>NAS 8-32611</b>	<b>University of Tennessee - Knoxville</b>	<b>4001</b>
Ice chambers design and warm fog microphysics applicable to the understanding and interpretation of flight experiments under low gravity conditions		
<i>Period</i>		<i>Obligations</i>
07/29/77-06/30/80	FY81	TOTAL \$75,708
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Carter, J M	MSFC/Anderson, B J	39-Env Sci, NEC
	MSFC/Vaughan, OH	

**NASA'S UNIVERSITY PROGRAM  
TENNESSEE (Continued)**

**NAS 8-32635**      **University of Tennessee - Knoxville**      **4002**  
Feasibility study of slant-range visibility by lidar technique  
*Period*      *Obligations*  
09/09/77-11/30/79      FY81      TOTAL \$28,339  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Kohl, R H      MSFC/Camp, D W      31-Atmos Sci  
MSFC/Moore, W W.

**NAS 8-32692**      **University of Tennessee - Knoxville**      **4003**  
Gust gradient analysis  
*Period*      *Obligations*  
07/07/78-02/02/82      FY81 \$40,000      TOTAL \$294,198  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Frost, W      MSFC/Camp, D W      31-Atmos Sci  
MSFC/Alexander, M B

**NAS 8-33218**      **University of Tennessee - Knoxville**      **4004**  
Digital LANDSAT data analysis of Tennessee  
*Period*      *Obligations*  
12/01/78-01/31/80      FY81      TOTAL \$17,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Shahrokhi, F      MSFC/Daniel, J L      39-Env Sci, NEC

**NAS 8-33225**      **University of Tennessee - Knoxville**      **4005**  
Air breathing engine/trajectory optimization study  
*Period*      *Obligations*  
09/29/78-09/29/79      FY81      TOTAL \$17,026  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Smith, V K , III      MSFC/Mercier, D R      41-Aero Engr  
MSFC/Stafford, W H

**NAS 8-33386**      **University of Tennessee - Knoxville**      **4006**  
Theoretical analysis of baroclinic flows  
*Period*      *Obligations*  
08/13/79-03/30/82      FY81 \$52,552      TOTAL \$98,052  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Antar, B N      MSFC/Fowles, W W      31-Atmos Sci  
MSFC/Fichtl, G H

**NAS 8-33447**      **University of Tennessee - Knoxville**      **4007**  
Vehicle motion requirements for scientific experiments in space  
*Period*      *Obligations*  
05/10/79-02/15/81      FY81      TOTAL \$11,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Antar, B N      MSFC/Fichtl, G H      13-Physics  
Collins, F      MSFC/Campbell, W

**NAS 8-33604**      **University of Tennessee - Knoxville**      **4008**  
Study relative to develop a microwave antenna pointing error sensing scheme  
*Period*      *Obligations*  
08/01/79-02/01/80      FY81      TOTAL \$19,600  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hung, J C      MSFC/Howell, J T , Jr      45-Elec Engr  
Lee, C W  
Peebles, P Z

**NAS 8-33849**      **University of Tennessee - Knoxville**      **4009**  
(GP-B) Gravity Probe-B pointing control and error analysis, study  
*Period*      *Obligations*  
04/24/80-10/24/80      FY81      TOTAL \$10,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hung, J C      MSFC/Parker, J R      13-Physics  
MSFC/Nurre, G S

**NAS 8-34268**      **University of Tennessee - Knoxville**      **4010**  
Study of convection in a solidifying binary mixture at reduced gravity  
*Period*      *Obligations*  
01/20/81-01/20/82      FY81 \$20,000      TOTAL \$20,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Antar, B N      MSFC/Schafer, C F      31-Atmos Sci  
MSFC/Fichtl, G H

**NAS 8-34320**      **University of Tennessee - Knoxville**      **4011**  
Hydrogen LSC waves for laser powered propulsion  
*Period*      *Obligations*  
07/08/81-03/07/82      FY81 \$59,981      TOTAL \$59,981  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Keefer, D R      MSFC/Jones, L W      13-Physics  
Elkins, R E      MSFC/Richmond, B J

**NAS 8-34426**      **University of Tennessee - Knoxville**      **4012**  
Gravity Probe-B error modeling and analysis  
*Period*      *Obligations*  
06/24/81-06/23/82      FY81 \$30,000      TOTAL \$30,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Hung, J C      MSFC/McMillon, J M      42-Astro Engr  
MSFC/Chubb, W B

**NCA 2-772901**      **University of Tennessee - Knoxville**      **4013**  
Theoretical analysis on the boundary layer development over a slotted wind tunnel wall  
*Period*      *Obligations*  
05/01/79-12/31/81      FY81      TOTAL \$39,956  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Tirres, C      ARC/Steinle, F W , Jr      41-Aero Engr  
Wu, J M

**NGL 43-001-006**      **University of Tennessee - Knoxville**      **4014**  
Spectroscopic studies of life shape of atmospheric gases and of absorption bands of inorganic solids  
*Period*      *Obligations*  
01/07/64-09/01/81      FY81      TOTAL \$1,318,628  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Gailar, N M      HQ-SL/Murphy, R E      31-Atmos Sci

**NGL 43-001-140**      **University of Tennessee - Knoxville**      **4015**  
Experimental investigations of opaque minerals and cooling history of lunar rocks  
*Period*      *Obligations*  
09/01/73-01/31/82      FY81 \$53,600      TOTAL \$512,357  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Taylor, L A      JSC/Warner, J L      11-Astronomy

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**NGT 43-001-800 University of Tennessee - Knoxville 4016**  
Graduate student researchers program  
*Period Obligations*  
06/01/80-05/31/81 FY81 TOTAL \$11,000  
*Prnn Invest NASA Tech Officer CASE Category*  
Taylor, L A JSC/Williams, R 32-Geological Sci

**NGT 43-001-801 University of Tennessee - Knoxville 4017**  
Graduate student researchers program  
*Period Obligations*  
04/01/81-03/31/82 FY81 \$11,150 TOTAL \$11,150  
*Prnn Invest NASA Tech Officer CASE Category*  
Keefer, D HQ-LC/Carter, C H 46-Mech Engr

**NGT 43-001-802 University of Tennessee - Knoxville 4018**  
Graduate student researchers program  
*Period Obligations*  
10/01/81-09/30/82 FY81 \$11,150 TOTAL \$11,150  
*Prnn Invest NASA Tech Officer CASE Category*  
Antar, B N HQ-LC/Carter, C H 49-Engr, NEC

**NGT 43-001-803 University of Tennessee - Knoxville 4019**  
Graduate student researchers program  
*Period Obligations*  
07/01/81-06/30/82 FY81 \$12,000 TOTAL \$12,000  
*Prnn Invest NASA Tech Officer CASE Category*  
Taylor, L A HQ-LC/Carter, C H 32-Geological Sci  
Hunter, R H

**NSG 1224 University of Tennessee - Knoxville 4020**  
A study of unsteady transonic flow analysis  
*Period Obligations*  
08/07/75-09/30/81 FY81 \$6,382 TOTAL \$136,973  
*Prnn Invest NASA Tech Officer CASE Category*  
Kimble, K R LARC/Bland, S R 41-Aero Engr  
LARC/Yates, E C, Jr

**NSG 3287 University of Tennessee - Knoxville 4021**  
Internal computational fluid mechanics program for turbomachinery  
*Period Obligations*  
07/01/79-08/31/81 FY81 TOTAL \$148,440  
*Prnn Invest NASA Tech Officer CASE Category*  
Kurosaka, M LARC/Siegel, R 41-Aero Engr  
Wu, J M  
Caruthers, J E

**NSG 7413 University of Tennessee - Knoxville 4022**  
Petrologic studies of meteorite groups  
*Period Obligations*  
02/01/78-03/31/82 FY81 \$23,900 TOTAL \$93,283  
*Prnn Invest NASA Tech Officer CASE Category*  
McSween, H Y HQ-SL/French, B M 32-Geological Sci  
HQ-SL/Quaide, W L

**NAS 9-15670 University of Tennessee - Memphis 4023**  
Relative toxicity testing of spacecraft materials  
*Period Obligations*  
11/10/78-11/09/81 FY81 \$35,800 TOTAL \$113,623  
*Prnn Invest NASA Tech Officer CASE Category*  
Autian, J JSC/Coleman, M E 56-Medical Sciences

**NAG 5-176 Vanderbilt University 4024**  
Chromospheric emission of selected stars Ionization structure of expanding atmospheres  
*Period Obligations*  
05/01/81-11/30/81 FY81 \$5,636 TOTAL \$5,636  
*Prnn Invest NASA Tech Officer CASE Category*  
Eaton, J A GSFC/Bogges, A 11-Astronomy

**NAS 8-32695 Vanderbilt University 4025**  
Solar radiation on glasses  
*Period Obligations*  
06/27/78-12/31/81 FY81 \$4,000 TOTAL \$53,799  
*Prnn Invest NASA Tech Officer CASE Category*  
Kinser, D L MSFC/Nichols, R L 47-Materials Engr  
MSFC/King, H M

**NAS 8-34428 Vanderbilt University 4026**  
Directional solidification of liquid miscibility gap systems  
*Period Obligations*  
07/02/81-07/01/82 FY81 \$30,000 TOTAL \$30,000  
*Prnn Invest NASA Tech Officer CASE Category*  
Lichter, B D MSFC/Johnson, M H 12-Chemistry  
MSFC/Strong, J S

**NCC 1-8 Vanderbilt University 4027**  
Advanced solar energy conversion  
*Period Obligations*  
05/01/79-08/31/82 FY81 \$79,551 TOTAL \$219,199  
*Prnn Invest NASA Tech Officer CASE Category*  
Lee, J H LARC/Jalufka, N W 13-Physics

**NSG 7343 Vanderbilt University 4028**  
Ultraviolet studies of galaxies  
*Period Obligations*  
05/01/77-06/30/80 FY81 TOTAL \$40,000  
*Prnn Invest NASA Tech Officer CASE Category*  
Weedman, D W HQ-SC/Weiler, E J 11-Astronomy

**NSG 7463 Vanderbilt University 4029**  
Ground-based photometry of HR 1099 coordinated with the October 1977 Copernicus campaign  
*Period Obligations*  
05/01/78-05/31/84 FY81 TOTAL \$4,193  
*Prnn Invest NASA Tech Officer CASE Category*  
Hall, D HQ-SC/Roman, N G 11-Astronomy  
HQ-SC/Rosendhal, J D

**NASA'S UNIVERSITY PROGRAM  
TENNESSEE (Continued)**

**NSG 7543** **Vanderbilt University** **4030**  
Ground-based UBV photometry of RS Canis Venticorum  
binaries  
*Period* *Obligations*  
08/15/79-07/30/82 **FY81 \$35,793** **TOTAL \$92,003**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hall, D **HQ-SC/Weiler, E J** **11-Astronomy**  
**HQ-SC/Bogges, N W**

**TEXAS**

**NAS 2-10801** **Baylor College of Medicine** **4031**  
Regulation of erythroproteins in mice during spaceflight  
*Period* *Obligations*  
09/05/80-09/30/81 **FY81 \$7,833** **TOTAL \$7,833**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Dunn, C D **ARC/Ferandin, J** **51-Biological Sci**

**NAS 9-14546** **Baylor College of Medicine** **4032**  
Etiological study of motion sickness by using subhuman  
primates  
*Period* *Obligations*  
05/01/75-04/30/82 **FY81 \$50,000** **TOTAL \$267,180**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Workman, G L **JSC/Homick, J L** **56-Medical Sciences**

**NAS 9-14662** **Baylor College of Medicine** **4033**  
Influence of the external parameters of space flight on the  
regulation of blood volume  
*Period* *Obligations*  
06/01/75-08/31/82 **FY81 \$89,623** **TOTAL \$336,043**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Alfrey, C **JSC/Leach, C S** **56-Medical Sciences**

**NAS 9-15891** **Baylor College of Medicine** **4034**  
Renal responses to water immersion  
*Period* *Obligations*  
06/01/79-12/31/81 **FY81 \$13,600** **TOTAL \$45,982**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Suki, W N **JSC/Leach, C S** **59-Life Sci, NEC**

**NAS 9-16029** **Baylor College of Medicine** **4035**  
Life science flight experiment  
*Period* *Obligations*  
01/17/80-01/31/82 **FY81** **TOTAL \$10,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Chriswell, B S **JSC/Thirolf, R G** **59-Life Sci, NEC**

**NAS 9-16040** **Baylor College of Medicine** **4036**  
Life science flight experiment  
*Period* *Obligations*  
01/17/80-01/31/82 **FY81** **TOTAL \$19,250**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Martin, R. R **JSC/Thirolf, R. G** **59-Life Sci, NEC**

**NAS 9-16180** **Baylor College of Medicine** **4037**  
Influence of space flight on erythroprotein activity and in-  
hibition  
*Period* *Obligations*  
08/01/80-05/31/82 **FY81 \$34,298** **TOTAL \$64,298**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Dunn, C D **JSC/Leach, C S** **56-Medical Sciences**

**NAS 9-16280** **Baylor College of Medicine** **4038**  
Operational virology support for microbiology lab  
*Period* *Obligations*  
12/01/80-11/30/81 **FY81 \$26,901** **TOTAL \$26,901**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Knight, V **JSC/Pierson, D L** **56-Medical Sciences**

**NAS 9-16387** **Baylor College of Medicine** **4039**  
Quantitation of urinary hydroxylsine metabolites  
*Period* *Obligations*  
05/22/81-12/31/81 **FY81 \$10,000** **TOTAL \$10,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Diferrante, N **JSC/Cintron, N M** **56-Medical Sciences**

**NGR 44-095-001** **Hardin - Simmons University** **4040**  
Study of psychophilic organisms isolated from manufacture and  
assembly areas of spacecraft to be used in the Viking missions  
*Period* *Obligations*  
08/21/72-12/31/81 **FY81 \$9,791** **TOTAL \$506,891**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Foster, T L **HQ-SB/Devincenzi, D L** **51-Biological Sci**

**NAG 9-13** **Houston Baptist University** **4041**  
Measurement of trace levels of chlorine in the stratosphere  
*Period* *Obligations*  
12/22/80-09/22/82 **FY81 \$4,578** **TOTAL \$4,578**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Warren, D C **JSC/Robbins, D E** **31-Atmos Sci**

**NAG 9-16** **Houston Baptist University** **4042**  
Spectroscopic investigation of the species emitting diffuse light  
in JSC solar panel plasma effects simulation  
*Period* *Obligations*  
02/01/81-09/30/81 **FY81 \$9,041** **TOTAL \$9,041**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Warren, D C **JSC/McCoy, J E** **13-Physics**

**NSG 5421** **Houston Baptist University** **4043**  
Investigation of mass flow in stellar atmospheres  
*Period* *Obligations*  
10/15/79-10/14/80 **FY81** **TOTAL \$4,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Modisette, J L **GSFC/Kondo, Y** **11-Astronomy**

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**TEXAS (Continued)**

**NSG 9038**                      **Houston Baptist University**                      **4044**  
Obtaining high spatial resolution planetary imagery with potential shuttle era instrumentation

<i>Period</i>	<i>Obligations</i>	
01/01/76-04/30/82	FY81 \$2,473	TOTAL \$56,723
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Morgan, T H	JSC/Potter, A E	11-Astronomy

**NSG 9006**                      **Prairie View A&M University**                      **4051**  
Measurement of growth morphological and bi-directional scattering parameters of wheat

<i>Period</i>	<i>Obligations</i>	
06/01/74-11/30/81	FY81 \$55,000	TOTAL \$232,019
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brams, E A	JSC/Browne, I D	39-Env Sci, NEC

**NSG 9033**                      **Pan American University**                      **4045**  
Experimental tests and model calculations on wheat varieties grown in India/Pakistan and in Texas

<i>Period</i>	<i>Obligations</i>	
08/28/75-05/31/82	FY81 \$60,000	TOTAL \$246,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lemaster, E W	JSC/Pitts, D E	39-Env Sci, NEC

**NAG 3-29**                      **Rice University**                      **4052**  
A study of solar energy radio frequency generation devices

<i>Period</i>	<i>Obligations</i>	
03/01/80-06/30/81	FY81	TOTAL \$65,175
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Freeman, J W	LERC/Kosmahl, H G	19-Phys Sci, NEC
Brotzen, F R		

**NCA 2-598001**                      **Prairie View A&M University**                      **4046**  
Joint development of recruiting techniques for minority employment

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/81	FY81	TOTAL \$2,831
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jackson, B N	ARC/White, W L	19-Phys Sci, NEC

**NAG 6-5**                      **Rice University**                      **4053**  
Study plasma interactions in the auroral ionosphere

<i>Period</i>	<i>Obligations</i>	
07/01/80-06/30/82	FY81 \$125,922	TOTAL \$248,254
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, H R	WFC/Early, L J	19-Phys Sci, NEC
Wolf, R A	WFC/Pless, R H	

**NCA 2-598101**                      **Prairie View A&M University**                      **4047**  
Resistance-capacitance active filter design

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$15,254	TOTAL \$15,254
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fuller, J H	ARC/Deboo, G J	29-Math Computer Sci, NEC

**NAGW 69**                      **Rice University**                      **4054**  
Electron beam-plasma interactions in the laboratory and in the ionosphere

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$60,000	TOTAL \$117,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bernstein, W	HQ-SC/Mayr, H G	19-Phys Sci, NEC
	HQ-SC/Schmerling, E R	

**NCA 2-598102**                      **Prairie View A&M University**                      **4048**  
Design of fatigue tester for wind tunnel compressor blade

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$24,786	TOTAL \$24,786
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Yeh, H Y	ARC/Matsuhira, D S	29-Math Computer Sci, NEC

**NAGW 166**                      **Rice University**                      **4055**  
Jupiter data analysis A search for magnetic anomaly effects

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$40,000	TOTAL \$40,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dessler, A J	HQ-SC/Mayr, H G	13-Physics
	HQ-SC/Wiskerchen, M J	

**NCA 2-598103**                      **Prairie View A&M University**                      **4049**  
Long term recording wattmeter

<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$27,083	TOTAL \$27,083
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Emanuel, E	ARC/Brown, R C, Jr	29-Math Computer Sci, NEC

**NAGW 168**                      **Rice University**                      **4056**  
Rotational and convective plasma flow in the Jovian magnetosphere

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$30,000	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hill, T W	HQ-SC/Mayr, H G	13-Physics
	HQ-SC/Wiskerchen, M J	

**NCA 2-598104**                      **Prairie View A&M University**                      **4050**  
Microprocessor instrumentation system

<i>Period</i>	<i>Obligations</i>	
09/01/81-09/31/82	FY81 \$21,384	TOTAL \$21,384
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Knighton, T G	ARC/Camisa, J T	29-Math Computer Sci, NEC

### NASA'S UNIVERSITY PROGRAM TEXAS (Continued)

NAS 2-10519		Rice University	4057
Life science experiment, ARC 781-288, adaptive characteristics of enzymes of nitrogen metabolism in mammals during space-flight			
Period		Obligations	
01/17/80-09/30/81	FY81	TOTAL	\$11,358
Prin Invest	NASA Tech Officer	CASE Category	
Campbell, J	ARC/Ferandin, J	51-Biological Sci	
Urhaben, J E	ARC/Sebasta, P D		

NAS 5-23338		Rice University	4058
Theoretical predictions and data analysis			
<i>Period</i>		<i>Obligations</i>	
02/04/74-12/31/81	FY81	\$25,000	TOTAL \$72,010
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Cloutier, P A	GSFC/Taylor, H A , Jr		13-Physics
	GSFC/Gagnon, B		

<b>NAS 5-25032</b>	<b>Rice University</b>	<b>4059</b>
<b>Data analysis support for low energy gamma-ray spectrometer (LEGS) balloon program</b>		
<i>Period</i>	<i>Obligations</i>	
05/04/78-07/05/81	FY81	<b>TOTAL \$16,704</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Haymes, R C	GSFC/Teggarden, B	31-Atmos Sci

<b>NAS 8-33199</b>	<b>Rice University</b>	<b>4060</b>
<b>Measurement of high temperature properties of liquid and solid tungsten</b>		
<i>Period</i>	<i>Obligations</i>	
11/27/78-12/31/81	FY81 \$15,000	TOTAL \$49,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Margrave, J	MSFC/Fallon, R A	47-Materials Engr
	MSFC/Ethridge, E C	

NAS 8-33361	Rice University	4061
Correlative studies of cosmic gamma ray sources under the HEAO-A guest investigator program		
<i>Period</i>	<i>Obligations</i>	
07/16/79-07/15/81	FY81	TOTAL \$13,651
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Haymes, R C	MSFC/Jones, J B	11-Astronomy
Meehan, C A		

NAS 8-33715		Rice University	4062
Science and application team for the lightning observation from space development program			
Period		Obligations	
01/24/80-01/23/81	FY81	TOTAL	\$37,734
Prin Invest	NASA Tech Officer	CASE Category	
Few, A A	MSFC/Vaughan, W W	31-Atmos Sci	
	MSFC/Smith, R E		

NAS 8-33771	Rice University	4063
Theoretical and experimental study of beam plasma physics		
<i>Period</i>	<i>Obligations</i>	
07/25/80-09/30/81	FY81	TOTAL \$223,016
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, H R	MSFC/Talley, D H	13-Physics

NAS 9-15630		Rice University	4064
Trace contaminant coadsorption by charcoal			
Period		Obligations	
07/01/78-03/01/82	FY81	\$11,950	TOTAL \$37,988
Prin Invest	NASA Tech Officer		CASE Category
Davis, S H	JSC/Lin, C H		43-Chem Engr

NAS 9-15940		Rice University	4065
Spectral analysis of galactic and extragalactic supernova remnants			
Period	Obligations		
05/15/79-09/15/81	FY81	\$2,400	TOTAL \$32,760
Prin Invest	NASA Tech Officer		CASE Category
Dufour, R J	JSC/Parker, R A		11-Astronomy

NAS 9-16428		Rice University	4066
Phase perturbation measurements through a heated ionosphere			
Period		Obligations	
08/03/81-12/15/81	FY81	\$15,056	TOTAL \$15,056
Prin Invest	NASA Tech Officer		CASE Category
Gordon, W E	JSC/Arndt, G D		31-Atmos Sci

<b>NGL 44-006-012</b>	<b>Rice University</b>	<b>4067</b>
<b>Laboratory development of solar wind heavy-ion mass spectrometer</b>		
<i>Period</i>	<i>Obligations</i>	
06/27/64-06/30/82	FY81 \$130,000	TOTAL \$1,583,736
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wolf, R A	HQ-SC/Mayr, H G	13-Physics
	HQ-SC/Schmerling, E R	

<b>NGL 44-006-127</b>	<b>Rice University</b>	<b>4068</b>
Lunar fines, their origin, evolution, and interaction with solar wind and cosmic rays		
<i>Period</i>	<i>Obligations</i>	
02/16/71-04/30/82	FY81 \$544	TOTAL \$592,693
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ling, A C	JSC/Warner, J L	32-Geological Sci
Holloway, J G		

NGR 44-006-137	Rice University	4069
Analysis of data on the magnetotail and solar wind		
Period	Obligations	
12/29/70-03/30/82	FY81 \$85,000	TOTAL \$482,027
Prin Invest	NASA Tech Officer	CASE Category
Dessler, A J	HQ-SC/Hedin, A	13-Physics

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NGT 44-006-800**                      **Rice University**                      **4070**  
 Zonal wind dynamics in the atmospheres of Jupiter and Saturn  
 from Voyager IRIS measurements graduate student researchers  
 program

<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/81	FY81	TOTAL \$10,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chamberlain, J W	GSFC/Mumma, M J	13-Physics

**NSG 5286**                      **Rice University**                      **4071**  
 Investigation of low altitude plasma phenomena

<i>Period</i>	<i>Obligations</i>	
07/01/78-12/31/81	FY81 \$25,000	TOTAL \$66,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Reiff, P H	GSFC/Spencer, N W	31-Atmos Sci

**NSG 5364**                      **Rice University**                      **4072**  
 Observations of the ultraviolet spectra of Magellanic clouds

<i>Period</i>	<i>Obligations</i>	
06/01/79-05/31/81	FY81	TOTAL \$24,874
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dufour, R J	GSFC/Bogges, A	11-Astronomy
Talbot, R J		
Shields, G A		

**NSG 7032**                      **Rice University**                      **4073**  
 Apollo data synthesis Lunar atmosphere and ionosphere

<i>Period</i>	<i>Obligations</i>	
04/01/74-03/01/83	FY81	TOTAL \$90,307
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Michel, F C	HQ-SL/Quaide, W L	31-Atmos Sci

**NSG 7043**                      **Rice University**                      **4074**  
 Research on planetary atmospheres

<i>Period</i>	<i>Obligations</i>	
03/01/74-04/30/82	FY81 \$64,985	TOTAL \$377,625
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chamberlain, J W	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

**NSG 7157**                      **Rice University**                      **4075**  
 Analysis and synthesis of Apollo lunar surface experiments package  
 suprathermal ion

<i>Period</i>	<i>Obligations</i>	
07/01/75-10/31/79	FY81	TOTAL \$199,715
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Freeman, J W , Jr	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NSG 7361**                      **Rice University**                      **4076**  
 Origin of the solar system The relationship of isotopic and  
 chemical anomalies in meteorites Earth, Moon and planets to  
 astrophysical models of their origin

<i>Period</i>	<i>Obligations</i>	
08/01/77-04/30/82	FY81 \$30,595	TOTAL \$88,785
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Clayton, D D	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

**NSG 7386**                      **Rice University**                      **4077**  
 Study of ion-molecule reactions of importance in planetary  
 atmosphere

<i>Period</i>	<i>Obligations</i>	
09/01/77-02/28/82	FY81 \$41,749	TOTAL \$145,131
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stebbins, R F	HQ-SL/Murphy, R E	31-Atmos Sci

**DEN 8-22**                      **Southern Methodist University**                      **4078**  
 To establish an operating solar house to be used as a demonstration  
 retro-fit

<i>Period</i>	<i>Obligations</i>	
07/29/81-09/15/81	FY81 \$25,000	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Crawford, G W	MSFC/Moore, W L	49-Engr, NEC
Howard, L L	MSFC/Murphy, R N	

**NAS 9-16140**                      **Southern Methodist University**                      **4079**  
 Proposed work on the Osta, Rio Grande rift project

<i>Period</i>	<i>Obligations</i>	
06/24/80-04/30/82	FY81	TOTAL \$9,994
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dungan, M A	JSC/Blanchard, D P	32-Geological Sci

**NAS 9-16438**                      **Southern Methodist University**                      **4080**  
 Study establishment of a center of excellence for applied  
 mathematical and statistical research

<i>Period</i>	<i>Obligations</i>	
08/01/81-10/31/83	FY81 \$66,000	TOTAL \$66,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gray, H L	JSC/Houston, G	21-Mathematics

**NGT 44-007-800**                      **Southern Methodist University**                      **4081**  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$10,995	TOTAL \$19,320
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dungan, M A	HQ-LC/Carter, C H	32-Geological Sci

**NSG 2354**                      **Southern Methodist University**                      **4082**  
 Experimental measurements of unsteady turbulent boundary layers  
 near separation

<i>Period</i>	<i>Obligations</i>	
12/01/78-06/30/82	FY81 \$23,495	TOTAL \$150,892
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Simpson, R L	ARC/Marvin, J G	42-Astro Engr
	ARC/Rubesin, M W	

## NASA'S UNIVERSITY PROGRAM

### TEXAS (Continued)

NAG 2-25	Texas A&M University System	4083
Airframe/propeller	propulsion integration analyses	
<i>Period</i>	<i>Obligations</i>	
05/01/80-04/30/82	FY81	TOTAL \$59,363
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miley, S J	ARC/Enomoto, F Y	41-Aero Engr

<b>NAG 1-11</b>	<b>Texas A&amp;M University</b>	<b>4084</b>
<b>Analytical study of jet shielding</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/81	FY81 \$29,839	<b>TOTAL \$67,604</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gerhold, C H	LARC/Willshire, W L, Jr	
		<b>41-Aero Engr</b>

NAG 1-112		Texas A&M University		4085	
The role of coherent structures in the generation of noise for subsonic jets					
Period		Obligations			
11/01/80-10/31/82		FY81	\$79,986	TOTAL \$79,986	
Prin Invest		NASA Tech Officer		CASE Category	
Morrison, G L		LARC/Yu, J C		13-Physics	

NAG 1-184		Texas A&M University		4086
Research on composite wing extensions for general aviation aircraft				
Period		Obligations		
05/01/81-10/31/82		FY81	\$59,089	TOTAL \$59,089
Prin Invest	NASA Tech Officer	CASE Category		
Horn, W J	LARC/Dow, M B	41-Aero Engr		
Nicks, O W	LARC/Dexter, H B			

NAG 1-214	Texas A&M University	4087
Airframe/propeller survey	propulsion intergration	state-of-technology
<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$39,731	TOTAL \$39,731
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miley, S J	LARC/Jernell, L S	41-Aero Engr

NAG 3-31		Texas A&M University		4088
Constitutive models for cyclic plasticity and creep behavior of super alloys at high temperature				
<i>Period</i>		<i>Obligations</i>		
04/01/80-06/29/82	FY81	\$50,000	TOTAL	\$95,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Haisler, W E	LERC/Thompson, R L			
Bradley, W L			47-Materials Engnr	

NAG 3-129	Texas A&M University	4089
Investigations into the injection molding of PMR15 polyimide		
<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$48,980	TOTAL \$48,980
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Malguarnera, S C	LERC/Serafini, J F	47-Materials Engr
	LERC/Vannucci, R D	

<b>NAG 3-142</b>	<b>Texas A&amp;M University</b>	<b>4090</b>
<b>Evaluation of reformed</b>	<b>methanol as an automotive engine fuel</b>	
<i>Period</i>	<i>Obligations</i>	
<b>12/15/80-08/30/82</b>	<b>FY81 \$175,000</b>	<b>TOTAL \$175,000</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Lalk, T R</b>	<b>LERC/Bailey, M M</b>	<b>46-Mech Engr</b>
<b>Davison, R R</b>	<b>LERC/Clark, J S</b>	
<b>Harris, W B</b>		

NAG 3-181	Texas A&M University	4091
Compressible and incompressible fluid seals		Influence on
rotordynamic response and stability		
<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$80,784	TOTAL \$80,784
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Childs, D W	LERC/Hendricks, R C	46-Mech Engr

NAG 5-31		Texas A&M University		4092
Investigation of remote sensing techniques for measuring soil moisture				
Period		Obligations		
03/01/80-01/31/82		FY81	\$300,000	TOTAL \$445,000
Pnn Invest		NASA Tech Officer		CASE Category
Newton, R W		GSFC/Schmugge, T J	32-Geological Sci	
Vanbavel, C H		GSFC/O'Neill, P		
Neiber, J				

<b>NAG 5-94</b>	<b>Texas A&amp;M University</b>	<b>4093</b>
<b>Research of altimetry data over trenches and island arcs and convection</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/80-06/30/82</b>	<b>FY81 \$27,017</b>	<b>TOTAL \$39,662</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Jones, G M</b>	<b>GSFC/Kouns, C W</b>	<b>32-Geological Sci</b>

NAS 2-10272	Texas A&M University	4094
Modification of a Swearingen metro wind tunnel model		
<i>Period</i>	<i>Obligations</i>	
06/19/79-03/31/82	FY81 \$90,541	TOTAL \$354,766
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brusse, J C	ARC/Gambucci, B J	41-Aero Engr
	ARC/Williams, L J	

NAS 5-22966	Texas A&M University	4095
Nimbus-G experiment team for coastal zone color scanner		
<i>Period</i>	<i>Obligations</i>	
02/10/76-06/30/82	FY81 \$70,140	TOTAL \$413,366
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
El-sayed, S Z	GSFC/Oakes, A G	41-Aero Engn
Trees, C		



## NASA'S UNIVERSITY PROGRAM

### TEXAS (Continued)

NAS 5-24383		Texas A&M University	4096
Applications of heat capacity mapping mission satellite data to the study of urban heating patterns			
<i>Period</i>		<i>Obligations</i>	
01/16/78-02/01/81	FY81	TOTAL	\$115,384
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Harlan, J C	GSFC/Stonesifer, G R		
			19-Phys Sci, NEC

<b>NAS 6-2884</b>	<b>Texas A&amp;M University</b>	<b>4097</b>
<b>Study of the dynamics of ocean surface current and Kuroshio circulation</b>		
<i>Period</i>		<i>Obligations</i>
02/01/78-12/31/81	FY81	TOTAL \$34,199
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ichibe, T	WFC/Huang, N	33-Oceanography
	WFC/Long, S	

<b>NAS 6-3072</b>	<b>Texas A&amp;M University</b>	<b>4098</b>
<b>Development of a unified thermal and trajectory model for the prediction of high-altitude balloon performance</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/01/80-03/31/81</b>	<b>FY81</b>	<b>TOTAL \$49,451</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Carlson, L A</b>	<b>WFC/Needleman, H C</b>	<b>41-Aero Engr</b>
<b>Horn, W J</b>		

NAS 8-31773		Texas A&M University	4099
The relationship between severe storms and their environment			
<i>Period</i>		<i>Obligations</i>	
01/02/76-12/31/81	FY81	TOTAL	\$351,981
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Scoggins, J R	MSFC/Hill, C K	31-Atmos Sci	
	MSFC/Turner, R E		

<b>NAS 8-33519</b>	<b>Texas A&amp;M University</b>	<b>4100</b>
<b>X-ray topography study of complex silicone microcircuits</b>		
<i>Period</i>	<i>Obligations</i>	
<b>02/12/80-02/11/81</b>	<b>FY81</b>	<b>TOTAL \$29,912</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Parker, P L</b>	<b>MSFC/Nowakowski, M</b>	<b>F 45-Elec Engr</b>
	<b>MSFC/Holladay, A M</b>	

NAS 8-33716		Texas A&M University	4101
Space Shuttle main engine fuel turbopump interstage seal test program			
<i>Period</i>		<i>Obligations</i>	
02/29/80-03/01/82	FY81	\$75,000	TOTAL \$343,447
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Childs, D W	MSFC/Garcia, F F		46-Mech Engr
	MSFC/Gross, L P		

<b>NAS 8-33776</b>	<b>Texas A&amp;M University</b>	<b>4102</b>
<b>Diagnostic analysis of atmospheric variability</b>	<b>the environment of severe storms using</b>	
<i>Period</i>	<i>Obligations</i>	
<b>02/12/80-02/11/82</b>	<b>FY81 \$40,710</b>	<b>TOTAL \$80,108</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Scoggins, J R</b>	<b>MSFC/Turner, R E</b>	<b>31-Atmos Sci</b>

<b>NAS 8-34133</b>	<b>Texas A&amp;M University</b>	<b>4103</b>
Satellite ground-based processing	special mesoscale network and data	
<i>Period</i>	<i>Obligations</i>	
02/05/81-01/04/82	FY81 \$227,467	TOTAL \$227,467
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Scoggins, J R	MSFC/Turner, R E	31-Atmos Sci
	MSFC/Hill, C K	

NAS 8-34532	Texas A&M University	4104
Mesoscale observational sounding program		
<i>Period</i>	<i>Obligations</i>	
07/20/81-02/19/82	FY81 \$102,000	TOTAL \$102,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Scoggins, J R	MSFC/Turner, R E	31-Atmos Sci
	MSFC/Hill, K	

NAS 8-34536		Texas A&M University	4105
Labyrinth seals for incompressible fluids			
<i>Period</i>		<i>Obligations</i>	
09/30/81-09/29/83	FY81	\$75,000	TOTAL \$75,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Morrison, G L	MSFC/Garcia, F F		46-Mech Engr
	MSFC/Gross, L A		

NAS 9-13894		Texas A&M University		4106
Classification techniques evaluation and yield modeling for a large crop inventory project				
Period		Obligations		
01/15/74-05/31/82	FY81	\$40,000	TOTAL	\$550,312
Prin Invest	NASA Tech Officer	CASE Category		
Sielken, R L	JSC/Browne, I D	22-Computer Science		

NAS 9-14689		Texas A&M University		4107
Application of feature selection				
Period		Obligations		
06/01/75-10/31/81		FY81	\$165,000	TOTAL \$566,218
Pnn Invest	NASA Tech Officer	CASE Category		
Heilman, J	JSC/Browne, I D	22-Computer Science		

NAS 9-14828		Texas A&M University		4108
Lunar sample irradiation services				
<i>Period</i>		<i>Obligations</i>		
11/01/75-08/31/81	FY81	\$10,680	TOTAL	\$70,680
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Randall, J D	JSC/Blanchard, D		39-Env Sci, NEC	

# NASA'S UNIVERSITY PROGRAM

## TEXAS (Continued)

**NAS 9-16073**                      **Texas A&M University**                      **4109**  
Study to develop a factor analysis statistical capability for the  
design performance laboratory

<i>Period</i>		<i>Obligations</i>
04/01/80-06/01/81	FY81	TOTAL \$5,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stramler, J H	JSC/Lewis, J L	51-Biological Sci

**NAS 9-16088**                      **Texas A&M University**                      **4110**  
Application of ray-tracing techniques for evaluating effects of  
ionospheric disturbances and spaceteenna structural distortions  
and/or tilts on the solar power satellite pilot beam signal

<i>Period</i>		<i>Obligations</i>
04/16/80-01/15/81	FY81 \$5,230	TOTAL \$5,230
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Marouf, A	JSC/Arndt, G D	45-Elec Engr

**NAS 9-16102**                      **Texas A&M University**                      **4111**  
Development of synthetic aperture radar design approach for  
wide-swath implementation

<i>Period</i>		<i>Obligations</i>
04/01/80-07/01/81	FY81	TOTAL \$35,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jean, B R	JSC/Krishen, K	31-Atmos Sci

**NAS 9-16185**                      **Texas A&M University**                      **4112**  
Chemical analysis of Martian analog samples

<i>Period</i>		<i>Obligations</i>
08/01/80-12/31/81	FY81 \$3,500	TOTAL: \$5,500
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Young, V	JSC/Gibson, E K	12-Chemistry

**NAS 9-16369**                      **Texas A&M University**                      **4113**  
Rangeland information task

<i>Period</i>		<i>Obligations</i>
05/01/81-02/28/82	FY81 \$50,000	TOTAL \$50,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Newton, R W	JSC/Hancock, K J	55-Agriculture Sci

**NAS 9-16375**                      **Texas A&M University**                      **4114**  
Study of behavioral modifications resultings from exposure to  
high linear energy transfer (LET) radiation

<i>Period</i>		<i>Obligations</i>
06/01/81-11/30/82	FY81 \$30,000	TOTAL \$30,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hightower, D	JSC/Barnes, C M	56-Medical Sciences

**NAS 9-16403**                      **Texas A&M University**                      **4115**  
Verification, through computer simulation, of a wide-swath  
synthetic aperture radar concept design

<i>Period</i>		<i>Obligations</i>
06/15/81-04/15/82	FY81 \$30,000	TOTAL \$30,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jean, R	JSC/Krishen, K	22-Computer Science

**NAS 9-16443**                      **Texas A&M University**                      **4116**  
Jet exhaust, ice suppression system validation study

<i>Period</i>		<i>Obligations</i>
08/05/81-07/31/82	FY81 \$113,000	TOTAL \$113,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Porteiro, J F	JSC/Strouhal, G	49-Engr, NEC
Norton, D J		

**NAS 9-16447**                      **Texas A&M University**                      **4117**  
Studies in mathematical pattern recognition and image analysis

<i>Period</i>		<i>Obligations</i>
09/01/81-10/31/82	FY81 \$97,400	TOTAL \$97,400
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Guseman Jr, L F	JSC/Browne, I D	39-Env Sci, NEC
Schumaker, L	JSC/Heydorn, R P	

**NCA 2-773101**                      **Texas A&M University**                      **4118**  
Development of analytical procedures for helicopter rotor tip  
aerodynamics

<i>Period</i>		<i>Obligations</i>
02/01/81-01/31/82	FY81 \$30,000	TOTAL \$30,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hall, G F	ARC/Shockey, G A	41-Aero Engr
Miley, S J		

**NCC 2-78**                      **Texas A&M University**                      **4119**  
Studies of advanced wing configurations

<i>Period</i>		<i>Obligations</i>
06/01/80-11/30/81	FY81	TOTAL \$77,810
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Chevalier, H	ARC/Corsiglia, V R	41-Aero Engr

**NCC 2-102**                      **Texas A&M University**                      **4120**  
Air pollutant production by algal cell cultures

<i>Period</i>		<i>Obligations</i>
11/01/80-10/31/81	FY81 \$51,547	TOTAL \$51,547
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fong, F	ARC/Zill, L P	54-Env Biology

**NCC 5-11**                      **Texas A&M University**                      **4121**  
Altimeter data over trenches and island arcs and convection in  
the mantle

<i>Period</i>		<i>Obligations</i>
05/01/79-08/31/80	FY81	TOTAL \$23,249
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Jones, G M	GSFC/Taylor, P T	32-Geological Sci

**NCC 5-15**                      **Texas A&M University**                      **4122**  
Determination of the spatial variability in localized precipitation  
patterns

<i>Period</i>		<i>Obligations</i>
06/01/79-11/30/80	FY81	TOTAL \$25,478
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Miller, L D	GSFC/Schmugge, T. J.	39-Env Sci, NEC
Blanchard, B J		

## NASA'S UNIVERSITY PROGRAM

### TEXAS (Continued)

<b>NGL 44-001-001</b>	<b>Texas A&amp;M University</b>	<b>4123</b>
Interdisciplinary space oriented research in physical, life and engineering sciences		
<i>Period</i>	<i>Obligations</i>	
02/01/62-05/31/81	FY81	TOTAL \$1,915,564
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Blanchard, B J	HQ-ET/Vitale, J A	39-Env Sci, NEC

NGR 44-001-117	Texas A&M University	4124
Radiative transfer in realistic planetary atmospheres		
<i>Period</i>	<i>Obligations</i>	
07/19/71-09/30/81	FY81 \$60,000	TOTAL \$393,955
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kattawar, G W	HQ-SL/Murphy, R E	31-Atmos Sci
	HO-SL/Brunk, W E	

<b>NGT 44-001-800</b>	<b>Texas A&amp;M University</b>	<b>4125</b>
Summer faculty fellowship program in engineering systems design		
<i>Period</i>	<i>Obligations</i>	
01/01/80-12/31/81	FY81	TOTAL \$182,963
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Norton, D J	HO-LC/Carter, C H	49-Engr, NEC

<b>NGT 44-001-801</b>	<b>Texas A&amp;M University</b>	<b>4126</b>
<b>Shearing of atmospherically driven nearshore dynamics</b>		
<i>Period</i>	<i>Obligations</i>	
09/01/80-08/31/82	FY81 \$11,881	<b>TOTAL \$21,206</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McGrail, D W	HQ-LC/Carter, C H	32-Geological Sci

<b>NSG 1174</b>	<b>Texas A&amp;M University</b>	<b>4127</b>
<b>Development of inverse transonic airfoil design methods including boundary layer and viscous interaction effects</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/75-01/31/82</b>	<b>FY81 \$40,852</b>	<b>TOTAL \$144,641</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Carlson, L A</b>	<b>LARC/Everhart, J L</b>	<b>41-Aero Engr</b>
	<b>LARC/Barnwell, R W</b>	

<b>NSG 1639</b>	<b>Texas A&amp;M University</b>	<b>4128</b>
<b>Design studies for a technology assessment receiver for the Global Positioning System</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/79-05/31/81</b>	<b>FY81</b>	<b>TOTAL \$39,991</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Painter, J H</b>	<b>LARC/Hearn, C P</b>	<b>45-Elec Engr</b>
<b>Noe, P S</b>	<b>LARC/Lytle, C D</b>	
<b>Rhyne, V T</b>		

NSG 2226		Texas A&M University		4129
Applicability of reliability and survivability program-version I to model reliability and survivability characteristics of aircraft weapon systems				
<i>Period</i>		<i>Obligations</i>		
05/01/77-02/01/82		FY81 \$25,000	TOTAL \$84,768	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Phillips, D T	ARC/Andre, W L		41-Aero Engr	
Foster, J W	ARC/Wong, J T			

NSG 5134	Texas A&M University	4130
Measurement of soil moisture trends with airborne scatterometers		
<i>Period</i>	<i>Obligations</i>	
10/11/76-03/31/82	<div> <div> FY81 \$49,995 </div> <div> TOTAL \$277,031 </div> </div>	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McFarland, J	GSFC/Chang, A T	32-Geological Sci

<b>NSG 5193</b>	<b>Texas A&amp;M University</b>	<b>4131</b>
<b>Temporal correlations of antecedent precipitation with Nimbus-5 electrically scanning microwave radiometer brightness temperatures</b>		
<i>Period</i>	<i>Obligations</i>	
08/01/77-12/31/80	FY81	TOTAL \$88,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McFarland, M J	GSFC/Schmugge, T J	31-Atmos Sci
Blanchard, B J		

<b>NSG 7037</b>	<b>Texas A&amp;M University</b>	<b>4132</b>
<b>The origin of the genetic code-a physical chemical model of codon assignment</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/07/74-07/31/80</b>	<b>FY81</b>	<b>TOTAL \$259,975</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Nagvary, J</b>	<b>HQ-SB/Devincenzi, D L</b>	<b>12-Chemistry</b>

<b>NAG 1-22</b>	<b>Texas Christian University</b>	<b>4133</b>
<b>Effects of aircraft noise on human activities</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/80-05/31/82	FY81 \$28,851	TOTAL \$64,331
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Arnoult, M D	LARC/Powell, C A	69-Psych, NEC
	LARC/Key, K F	

NAG 2-69		Texas Christian University		4134
Effects of pure tones in intelligibility and pilot workload				
<i>Period</i>		<i>Obligations</i>		
09/01/80-12/31/81	FY81	\$34,527	TOTAL	\$34,527
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Arnolt, M D	ARC/Huff, E M		69-Psych, NEC	

<b>NAG 1-28</b>	<b>Texas Tech University</b>	<b>4135</b>
<b>Lightning sensors and data interpretation</b>		
<i>Period</i>	<i>Obligations</i>	
01/15/80-01/14/82	FY81 \$60,310	TOTAL \$110,310
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Trost, T F	LARC/Zaeffel, K P	45-Elec Engr
	LARC/Pitts. F L	

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAS 9-11162**                      **Texas Tech University**                      **4136**  
Insulated ECG electrodes  
*Period*                                      *Obligations*  
06/29/70-02/01/82                      **FY81**                      **TOTAL \$134,892**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Portnoy, W M                      JSC/Day, J L                      45-Elec Engr

**NGT 44-011-800**                      **Texas Tech University**                      **4137**  
Equilibrium deprivation and its effects on the nervous system  
*Period*                                      *Obligations*  
06/15/80-09/14/82                      **FY81 \$11,650**                      **TOTAL \$22,095**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hartman, H B                      HQ-LC/Carter, C H                      51-Biological Sci

**NSG 2137**                      **Texas Tech University**                      **4138**  
Pharmacological prevention of calcium and bone loss  
*Period*                                      *Obligations*  
05/01/76-04/30/82                      **FY81 \$11,000**                      **TOTAL \$59,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Kenny, A D                      ARC/Holton, E M                      56-Medical Sciences

**NSG 7435**                      **Texas Tech University**                      **4139**  
Application of laser ranging and very long base interferometry data to a study of plate tectonic driving forces  
*Period*                                      *Obligations*  
05/01/78-07/31/81                      **FY81:**                      **TOTAL \$70,488**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hartman, H B                      HQ-SB/Halstead, T W                      32-Geological Sci

**NAG 3-198**                      **University of Houston - Houston**                      **4140**  
Investigations of basic mechanisms in aeroacoustics  
*Period*                                      *Obligations*  
07/01/81-06/30/82                      **FY81 \$55,930**                      **TOTAL \$55,930**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hussain, A K                      MSFC/Stone, J R                      41-Aero Engr

**NAG 6-18**                      **University of Houston - Houston**                      **4141**  
Program to observe X-ray auroral quenching in Waterhole II  
*Period*                                      *Obligations*  
04/01/81-03/31/82                      **FY81 \$55,000**                      **TOTAL \$55,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Sheldon, W R                      WFC/Early, L J                      13-Physics  
Benbrook, J R                      WFC/Pless, R H  
Bering, E A

**NAGW 39**                      **University of Houston - Houston**                      **4142**  
Granule armor on sand dunes  
*Period*                                      *Obligations*  
03/01/80-02/28/82                      **FY81 \$9,974**                      **TOTAL: \$21,242**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Smith, R S                      HQ-SL/Boyce, J M                      31-Atmos Sci  
HQ-SL/Quaide, W L

**NAGW 169**                      **University of Houston - Houston**                      **4143**  
Galilean satellite geologic mapping  
*Period*                                      *Obligations*  
04/01/81-03/31/82                      **FY81 \$10,706**                      **TOTAL \$10,706**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
King, E A                      HQ-SL/Boyce, J M                      32-Geological Sci  
HQ-SL/Holt, H E

**NAGW 178**                      **University of Houston - Houston**                      **4144**  
High temperature volatilization experiment with materials approximating solar composition  
*Period*                                      *Obligations*  
04/01/81-03/31/82                      **FY81 \$19,872**                      **TOTAL \$19,872**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
King, E A                      HQ-SL/Quaide, W L                      32-Geological Sci  
HQ-SL/French, B M

**NAS 2-10087**                      **University of Houston - Houston**                      **4145**  
Influence of weightlessness on lignification in developing plant seedlings  
*Period*                                      *Obligations*  
11/01/78-12/31/81                      **FY81 \$75,928**                      **TOTAL \$197,958**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Cowles, J R                      ARC/Tremor, J W                      59-Life Sci, NEC  
Scheld, H W

**NAS 9-11676**                      **University of Houston - Houston**                      **4146**  
Characterization of heat transfer in nutrient materials  
*Period*                                      *Obligations*  
04/28/71-07/01/82                      **FY81**                      **TOTAL \$99,948**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Cox, J E                      JSC/Sauer, R L                      59-Life Sci, NEC

**NAS 9-15882**                      **University of Houston - Houston**                      **4147**  
Analysis of volatile metabolites in biological fluids as indicators of prodromal disease conditions  
*Period*                                      *Obligations*  
06/01/79-09/30/81                      **FY81**                      **TOTAL \$79,948**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Zlatkis, A                      JSC/Schneider, H J                      51-Biological Sci

**NAS 9-15944**                      **University of Houston - Houston**                      **4148**  
Design of a food service habitat for a large scale space station  
*Period*                                      *Obligations*  
08/23/79-09/20/81                      **FY81 \$21,800**                      **TOTAL \$36,800**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bell, L                      JSC/Smith, M C                      99-Multi-Discip

**NAS 9-16351**                      **University of Houston - Houston**                      **4149**  
Development of high resolution gas chromatograph capillary column for analysis of airborne contaminants  
*Period*                                      *Obligations*  
04/01/81-03/31/82                      **FY81 \$18,000**                      **TOTAL \$18,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Zlatkis, A                      JSC/Coleman, M                      12-Chemistry

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NGR 44-005-002**      **University of Houston - Houston**      **4150**  
Studies in organic cosmochemistry, including consideration of compound formation under primitive Earth conditions and of organic material in selected meteorites

<i>Period</i>	<i>Obligations</i>
06/18/62-08/31/82	FY81 \$95,685      TOTAL \$1,240,590
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Oro, J	HQ-SB/Devincenzi, D L
Eichberg, J	32-Geological Sci

**NGR 44-005-091**      **University of Houston - Houston**      **4151**  
Spectroscopic and photochemical study of photochromic compounds

<i>Period</i>	<i>Obligations</i>
03/07/69-08/31/79	FY81      TOTAL \$505,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Becker, R S	HQ-SB/Young, R S      12-Chemistry

**NGT 44-005-115**      **University of Houston - Houston**      **4152**  
Summer faculty fellowship program in research

<i>Period</i>	<i>Obligations</i>
05/06/74-03/31/82	FY81 \$174,037      TOTAL \$1,439,126
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Huang, C J	HQ-LC/Carter, C H      49-Engr, NEC

**NGT 44-005-800**      **University of Houston - Houston**      **4153**  
Graduate student researchers program

<i>Period</i>	<i>Obligations</i>
09/01/80-08/31/82	FY81 \$13,000      TOTAL \$24,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Middleditch, B S	HQ-LC/Carter, C H      19-Phys Sci, NEC

**NGT 44-005-801**      **University of Houston - Houston**      **4154**  
Graduate student researchers program

<i>Period</i>	<i>Obligations</i>
06/01/81-05/31/82	FY81 \$12,300      TOTAL \$12,300
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Fox, G E	HQ-LC/Carter, C H      59-Life Sci, NEC

**NSG 1475**      **University of Houston - Houston**      **4155**  
The large-scale coherent structure in the circular jet

<i>Period</i>	<i>Obligations</i>
12/01/77-11/30/81	FY81      TOTAL \$110,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Nadkarni, A A	LARC/Maestrello, L      41-Aero Engr

**NSG 1603**      **University of Houston - Houston**      **4156**  
Investigation of algorithms for large space structures

<i>Period</i>	<i>Obligations</i>
03/15/79-03/14/82	FY81 \$31,526      TOTAL \$87,730
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Denman, E D	LARC/Horner, G C      45-Elec Engr

**NSG 2337**      **University of Houston - Houston**      **4157**  
The high Reynolds number free shear layer (behind a backward facing step)

<i>Period</i>	<i>Obligations</i>
09/01/78-07/31/82	FY81 \$30,619      TOTAL \$252,420
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hussain, A K	ARC/Viegas, J R      47-Materials Engr
Kleis, S J	

**NSG 7300**      **University of Houston - Houston**      **4158**  
The role cell membranes in the regulation of lignification in pine cells

<i>Period</i>	<i>Obligations</i>
10/01/76-04/30/80	FY81      TOTAL \$89,986
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hendrix, D H	HQ-SB/Halstead, T W      51-Biological Sci
	HQ-SB/Geib, D S

**NSG 7410**      **University of Houston - Houston**      **4159**  
Wind regime of various dune types in the southeastern California desert

<i>Period</i>	<i>Obligations</i>
11/01/77-04/30/80	FY81      TOTAL \$38,714
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Smith, R S	HQ-SL/Dwornik, S E      32-Geological Sci
	HQ-SL/Boyce, J M

**NSG 7440**      **University of Houston - Houston**      **4160**  
Evolutionary relationships in the microbial world

<i>Period</i>	<i>Obligations</i>
06/01/78-05/31/82	FY81 \$53,000      TOTAL \$191,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Fox, G E	HQ-SB/Devincenzi, D L      51-Biological Sci

**NSG 7551**      **University of Houston - Houston**      **4161**  
Mars Significance of large open spaces within the north polar dune fields

<i>Period</i>	<i>Obligations</i>
04/01/79-03/31/82	FY81 \$12,565      TOTAL \$36,903
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Smith, R	HQ-SL/Boyce, J M      32-Geological Sci
	HQ-SL/Quaide, W L

**NSG 7609**      **University of Houston - Houston**      **4162**  
Measure electron precipitation induced by barium injections in the magnetosphere Flight of parachute deployed payloads during the barium GEOS experiment

<i>Period</i>	<i>Obligations</i>
08/01/79-07/31/81	FY81      TOTAL \$42,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Sheldon, W R.	HQ-SC/Schmerling, E R      19-Phys Sci, NEC

## NASA'S UNIVERSITY PROGRAM

### TEXAS (Continued)

NSG 7617	University of Houston - Houston	4163
Investigation of multizoned chondrules and dark rim materials in ordinary and carbonaceous chondrites		
<i>Period</i>	<i>Obligations</i>	
07/01/79-08/31/80	FY81	TOTAL \$24,959
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
King, E A	HQ-SL/French, B M	32-Geological Sci
	HQ-SL/Quaide, W L	

NSG 9042	University of Houston - Houston		4164
Aromatic biosynthesis in pine tissues			
Period	Obligations		
04/01/76-05/30/82	FY81 \$30,000	TOTAL	\$179,800
Prin Invest	NASA Tech Officer	CASE Category	
Cowles, J R	HQ-SB/Halstead, T W	51-Biological Sci	

<b>DEN 8-1</b>		<b>University of Houston - Clear Lake</b>	<b>4165</b>
<b>Installation of a solar energy system</b>			
<i>Period</i>		<i>Obligations</i>	
<b>06/14/78-12/31/80</b>	<b>FY81</b>	<b>TOTAL</b>	<b>\$233,174</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
<b>Samfield, E</b>	<b>MSFC/Clark, J</b>		<b>31-Atmos Sci</b>

NAS 9-16136		University of Houston - Clear Lake		4166
Analysis of physical exercise and exercise protocols for space transportation system operation				
<i>Period</i>		<i>Obligations</i>		
09/01/80-12/31/82	FY81	\$35,000	TOTAL	\$80,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Coleman, A E	JSC/Bungo, M		56-Medical Sciences	

NAS 9-16422		University of Houston - Clear Lake	4167
Study entitled performance and analysis of JSC ground scatterometer system			
<i>Period</i>	<i>Obligations</i>		
06/01/81-01/31/82	FY81	\$19,550	TOTAL \$19,550
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Dickerson, E T	JSC/Fenner, R G		11-Astronomy

NSG 3255	University of Texas - Arlington	4168
Generator (MHD) kinetics analysis	off-design performance with NoX chemical	
<i>Period</i>	<i>Obligations</i>	
03/01/79-01/13/82	FY81 \$34,405	TOTAL \$93,149
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilson, D R	LERC/Smith, J M	49-Engr, NEC

NAG 1-79	University of Texas - Austin	4169
A theoretic study of splines under tension		
<i>Period</i>	<i>Obligations</i>	
06/10/80-06/09/82	FY81	TOTAL \$43,972
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cline, A K	LARC/Schiess, J. R	
		22-Computer Science

NAG 2-5	University of Texas - Austin	4170
Finite elements and	Navier-Stokes problems	
<i>Period</i>	<i>Obligations</i>	
10/01/79-09/30/81	FY81 \$6,843	TOTAL \$12,835
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Carey, G F	ARC/Lasinski, T. A	41-Aero Engr
	ARC/Kutler, P	

<b>NAG 2-67</b>	<b>University of Texas - Austin</b>	<b>4171</b>
<b>Density and temperature structure of clouds around low luminosity young stars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/80-11/14/81</b>	<b>FY81 \$131,850</b>	<b>TOTAL \$131,850</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Harvey, P M</b>	<b>ARC/Haughney, L</b>	<b>11-Astronomy</b>

NAG 2-133		University of Texas - Austin		4172
Spectroscopy of molecular clouds at 5-8 microns from the Kuiper				
Airborne Observatory				
Period		Obligations		
10/01/81-09/30/82	FY81	\$18,000	TOTAL \$18,000	
Prin Invest	NASA Tech Officer		CASE Category	
Evans, N J	ARC/Haughney, L C		11-Astronomy	

<b>NAG 5-80</b>	<b>University of Texas - Austin</b>	<b>4173</b>
<b>Abundance effects on mass loss in selected stars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>07/01/80-08/31/82</b>	<b>FY81</b>	<b>TOTAL \$9,300</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Parsons, S B</b>	<b>GSFC/Boggess, A</b>	<b>11-Astronomy</b>
<b>Wray, J D</b>		
<b>Bruhweiler, F C</b>		

NAG 5-173		University of Texas - Austin	4174
Observations of weak G-band stars			
<i>Period</i>		<i>Obligations</i>	
05/01/81-04/30/82	FY81	\$950	TOTAL \$950
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Sneden, C	GSFC/Bogges, A		11-Astronomy

<b>NAG 8-350</b>	<b>University of Texas - Austin</b>	<b>4175</b>
High Energy Astronomical Observatory-B guest investigation search for X-rays associated with the variable far-infrared sources in NGC 6334		
<i>Period</i>	<i>Obligations</i>	
<b>06/23/80-06/22/81</b>	<b>FY81</b>	<b>TOTAL \$2,390</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Wheeler, J C</b>	<b>MSFC/Swearengen, J C</b>	<b>11-Astronomy</b>

<b>NAG 8-404</b>	<b>University of Texas - Austin</b>	<b>4176</b>
<b>Time variations of X-ray emission of Delta Cephei stars</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/18/81-06/17/82</b>	<b>FY81 \$6,300</b>	<b>TOTAL \$6,300</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Parsons, S B</b>	<b>MSFC/Stone, J F</b>	<b>11-Astronomy</b>
<b>Bohm-vitense, E</b>		

### NASA'S UNIVERSITY PROGRAM TEXAS (Continued)

<b>NAG 9-11</b>	<b>University of Texas - Austin</b>	<b>4177</b>
<b>Tectonic analysis of the San Luis Basin segment of the Rio Grande rift</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/80-05/31/82</b>	<b>FY81</b>	<b>TOTAL \$35,700</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Muehlberger, W R</b>	<b>JSC/Blanchard, D P</b>	<b>32-Geological Sci</b>

NAS 8-32906		University of Texas - Austin		4184
Scientific investigations in support of the space telescope project, to assure that the space telescope will perform astrometric functions				
Period	Obligations			
02/01/78-02/23/84	FY81	\$150,000	TOTAL	\$850,000
Prin Invest	NASA Tech Officer	CASE Category		
Jefferys, W H	MSFC/O'dell, C R	11-Astronomy		

<b>NAGW 233</b>	<b>University of Texas - Austin</b>	<b>4178</b>
<b>Fiducial reference for the Hipparcos reference system</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/01/81-08/31/83</b>	<b>FY81 \$18,498</b>	<b>TOTAL \$18,498</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Duncombe, R L</b>	<b>HQ-SC/Wegler, E J</b>	<b>11-Astronomy</b>
	<b>HO-SC/Bogess, N W</b>	

NAS 8-33980		University of Texas - Austin	4185
Multishaker model testing			
<i>Period</i>		<i>Obligations</i>	
09/15/80-10/01/82	FY81	\$41,229	TOTAL \$91,229
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Craig, R C	MSFC/Kiefling, L A		49-Engr, NEC
	MSFC/Ivey, E W		

NAS 5-25656	University of Texas - Austin	4179
Space telescope/high resolution spectrograph		
<i>Period</i>	<i>Obligations</i>	
05/09/79-01/31/82	FY81	TOTAL \$10,000
<i>Prnt Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Trafton, L M	GSFC/Liberatore, F J	11-Astronomy

NAS 9-13680		University of Texas - Austin		4186	
Assessment of real gas effects on the extrapolation of shuttle flow field phenomena to flight conditions					
Period		Obligations			
09/27/73-08/31/82		FY81 \$25,000		TOTAL \$241,985	
Prin Invest		NASA Tech Officer		CASE Category	
Bertin, J J		JSC/Goodrich, W D		41-Aero Engr	

NAS 5-25898		University of Texas - Austin		4180	
Satellite ranging data analysis LAGEOS geodynamics experiment					
No 2					
<i>Period</i>		<i>Obligations</i>			
11/21/79-09/21/81		FY81		TOTAL \$50,000	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Shelus, P J		GSFC/Stephanides, C C		32-Geological Sci	

<b>NAS 9-16171</b>	<b>University of Texas - Austin</b>	<b>4187</b>
<b>Mathematical modeling and simulation of the advanced synthetic aperture radar (ASAR) project</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/01/80-09/01/81</b>	<b>FY81</b>	<b>TOTAL \$35,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Griffin, C R</b>	<b>JSC/Krishnan, K</b>	<b>21-Mathematics</b>

<b>NAS 5-25948</b>	<b>University of Texas - Austin</b>	<b>4181</b>
Operation and management of the lunar and satellite laser ranging ground station equipment at McDonald Observatory, Texas		
<i>Period</i>	<i>Obligations</i>	
11/15/79-11/10/81	FY81 \$701,000	TOTAL \$1,674,784
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Silverberg, E C	GSFC/Adelman, A G	11-Astronomy
Shelus, P J		

<b>NAS 9-16208</b>		<b>University of Texas - Austin</b>		<b>4188</b>
<b>Digital correlation of Apq-102A X-band radar imagery, and SAR software support</b>				
<i>Period</i>		<i>Obligations</i>		
10/01/80-09/30/81	<b>FY81</b>	<b>\$24,720</b>	<b>TOTAL</b>	<b>\$24,720</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Griffin, C R	JSC/Alexander, J D			
		29-Math Computer Sci. NEC		

<b>NAS 5-25991</b>	<b>University of Texas - Austin</b>	<b>4182</b>
<b>Solid Earth dynamics using laser geodynamics satellite range observations</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/27/79-03/26/83</b>	<b>FY81</b>	<b>TOTAL \$269,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Tapley, B</b>	<b>GSFC/Stephanides, C</b>	<b>19-Phys Sci, NEC</b>

<b>NAS 9-16221</b>	<b>University of Texas - Austin</b>	<b>4189</b>
<b>Study numerical methods for ground simulation of satellite motion stability</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/17/80-09/01/81</b>	<b>FY81</b>	<b>TOTAL \$5,000</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Broucke, R</b>	<b>JSC/Bond, V</b>	
	<b>29-Math Computer Sci. NEC</b>	

NAS 8-32905		University of Texas - Austin	4183
Scientific investigation in support of the space telescope project			
Period		Obligations	
02/15/78-12/31/84	FY81	TOTAL \$285,400	
Prin Invest	NASA Tech Officer	CASE Category	
Lambert, D L	MSFC/O'dell, C R	11-Astronomy	

<b>NAS 9-16308</b>		<b>University of Texas - Austin</b>	<b>4190</b>
<b>Study entitled 'lifetime analysis of geosynchronous'</b>			
<i>Period</i>		<i>Obligations</i>	
<b>01/30/81-10/31/81</b>	<b>FY81</b>	<b>\$4,999</b>	<b>TOTAL \$4,999</b>
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
<b>Naczozy, P E</b>	<b>JSC/Bond, V</b>	<b>42-Astro Engr</b>	

**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NAS 9-16348**                      **University of Texas - Austin**                      **4191**  
Study of collision dangers for spacecraft  
*Period*    *Obligations*  
05/01/81-02/12/82                      **FY81 \$9,800**                      **TOTAL \$9,800**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Szebehely, V G                      JSC/Kessler, D J  
29-Math Computer Sci, NEC

**NAS 9-16437**                      **University of Texas - Austin**                      **4192**  
Computer simulation for multibeam squitmode synthetic aperture radar  
*Period*    *Obligations*  
09/28/81-06/30/82                      **FY81 \$13,934**                      **TOTAL \$13,934**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Tucker, A J                      JSC/Krishen, K  
29-Math Computer Sci, NEC

**NASW 2974**                      **University of Texas - Austin**                      **4193**  
Design, development, construction and operational testing of a completely operational transportable lunar laser tracking station capable of attaining a three century range accuracy  
*Period*    *Obligations*  
07/16/76-04/30/80                      **FY81**                      **TOTAL \$1,351,631**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Silverberg, E C                      HQ-SM/Shirey, W H 19-Phys Sci, NEC

**NASW 3296**                      **University of Texas - Austin**                      **4194**  
The contractor shall design, develop, construct and test a fully operational lunar laser ranging station  
*Period*    *Obligations*  
12/01/79-04/01/82                      **FY81**                      **TOTAL \$571,990**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Silverberg, E                      GSFC/Hughes, W E                      42-Astro Engr

**NASW 3388**                      **University of Texas - Austin**                      **4195**  
Study involving satellite and terrestrial propagation measurements and analysis  
*Period*    *Obligations*  
07/15/80-07/14/81                      **FY81**                      **TOTAL \$80,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Vogel, W                      HQ-EC/Ippolito, L J                      45-Elec Engr

**NGL 44-012-055**                      **University of Texas - Austin**                      **4196**  
Polarization and time structure of Jovian decametric radiation and the structure of interplanetary plasma  
*Period*    *Obligations*  
05/25/66-04/30/81                      **FY81**                      **TOTAL \$1,041,980**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Douglas, J N                      HQ-SL/Brunk, W E                      11-Astronomy  
HQ-SL/Murphy, R E

**NGR 44-012-152**                      **University of Texas - Austin**                      **4197**  
A program of planetary studies  
*Period*    *Obligations*  
06/25/69-12/31/81                      **FY81 \$511,488**                      **TOTAL \$4,877,186**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Smith, H J                      HQ-SL/Brunk, W E                      11-Astronomy  
HQ-SL/Murphy, R E

**NGR 44-012-282**                      **University of Texas - Austin**                      **4198**  
Outer planet satellite studies  
*Period*    *Obligations*  
09/01/77-10/31/81                      **FY81**                      **TOTAL \$306,193**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Mulholland, J D                      HQ-SL/Brunk, W E                      11-Astronomy  
HQ-SL/Murphy, R E

**NSG 1446**                      **University of Texas - Austin**                      **4199**  
Research into a data management system for scientific/engineering applications  
*Period*    *Obligations*  
09/01/77-10/31/81                      **FY81**                      **TOTAL \$161,985**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Browne, J C                      LARC/Shipman, F S                      22-Computer Science  
LARC/Shoosmith, J N

**NSG 1479**                      **University of Texas - Austin**                      **4200**  
Verification/validation of Space Shuttle flight computer programming language (HAL/S)  
*Period*    *Obligations*  
01/01/78-12/31/79                      **FY81**                      **TOTAL \$51,747**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Browne, J C                      LARC/Will, R W                      22-Computer Science  
Good, D I                      LARC/Foudriat, E C

**NSG 2065**                      **University of Texas - Austin**                      **4201**  
Antecedents of achievement and creativity  
*Period*    *Obligations*  
02/01/75-03/31/82                      **FY81 \$80,000**                      **TOTAL \$458,217**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Helmreich, R L                      ARC/Patton, R M                      69-Psych, NEC

**NSG 3190**                      **University of Texas - Austin**                      **4202**  
Preparation, characterization, physical testing and performance of fluorocarbon membranes and separators  
*Period*    *Obligations*  
06/01/78-05/31/80                      **FY81**                      **TOTAL \$75,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lagow, R J                      LERC/Shebley, D W  
Dumitru, E T                      LERC/Hsu, L C                      56-Medical Sciences

**NSG 3198**                      **University of Texas - Austin**                      **4203**  
Acoustic properties of duct lining materials  
*Period*    *Obligations*  
07/01/78-05/30/82                      **FY81**                      **TOTAL \$60,736**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Blackstock, D T                      LERC/Rice, E J                      13-Physics  
Panton, R L  
Perreira, N D



**NASA'S UNIVERSITY PROGRAM  
TEXAS (Continued)**

**NSG 5328**                      **University of Texas - Austin**                      **4204**  
Ultraviolet spectroscopy of giant and supergiant stars  
*Period*    *Obligations*  
02/01/79-12/31/80                      FY81                      TOTAL \$11,720  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Parsons, S B                      GSFC/Bogges, A                      11-Astronomy

**NSG 5337**                      **University of Texas - Austin**                      **4205**  
Spectrophotometry of selected early type stars  
*Period*    *Obligations*  
12/15/78-06/30/81                      FY81                      TOTAL \$9,455  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wray, J D                      GSFC/Bogges, A                      11-Astronomy  
Henize, K G

**NSG 5379**                      **University of Texas - Austin**                      **4206**  
Ultraviolet spectroscopy of symbiotic stars, recurrent and old novae  
*Period*    *Obligations*  
06/25/79-12/31/81                      FY81 \$8,000                      TOTAL \$31,100  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lambert, D L                      GSFC/Bogges, A                      11-Astronomy  
Shields, G A  
Dominy, J F

**NSG 5387**                      **University of Texas - Austin**                      **4207**  
Ultraviolet-optical spectrophotometry of interesting quasi-stellar objects  
*Period*    *Obligations*  
07/01/79-09/30/81                      FY81                      TOTAL \$1,670  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wills, B J                      GSFC/Bogges, A                      11-Astronomy  
Wills, D

**NSG 7159**                      **University of Texas - Austin**                      **4208**  
Preliminary geophysical and geological site survey of the region of the McDonald Observatory  
*Period*    *Obligations*  
09/08/75-06/30/81                      FY81                      TOTAL \$349,057  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dorman, J H                      HQ-ER/Finley, C J                      19-Phys Sci, NEC  
Latham, G V                      HQ-ER/Flinn, E A

**NSG 7232**                      **University of Texas - Austin**                      **4209**  
Astrophysics of supermassive accretion disks  
*Period*    *Obligations*  
05/01/76-08/30/82                      FY81 \$22,000                      TOTAL \$115,088  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Shield, G A                      HQ-SC/Weiller, E J                      11-Astronomy  
Wheeler, J C                      HQ-SC/Bogges, N W

**NSG 7363**                      **University of Texas - Austin**                      **4210**  
Lunar tectonics through space and time  
*Period*    *Obligations*  
07/01/77-07/31/80                      FY81                      TOTAL \$45,974  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Muehlberger, W R                      HQ-SL/Dwornik, S E                      32-Geological Sci  
HQ-SL/Quaide, W L

**NSG 7371**                      **University of Texas - Austin**                      **4211**  
Analysis of ultraviolet stellar spectra obtained with Skylab experiment S-019  
*Period*    *Obligations*  
08/01/77-05/31/82                      FY81                      TOTAL \$112,945  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wray, J D                      HQ-SC/Weiler, E J                      11-Astronomy

**NSG 7381**                      **University of Texas - Austin**                      **4212**  
Program of 1-5 micron photometry of infrared sources embedded in molecular clouds  
*Period*    *Obligations*  
09/01/77-08/31/81                      FY81                      TOTAL \$39,797  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Evans, N J, II                      HQ-SC/Bogges, N W                      11-Astronomy

**NSG 7408**                      **University of Texas - Austin**                      **4213**  
Orbital theories of outer planet satellites  
*Period*    *Obligations*  
12/01/77-01/31/82                      FY81                      TOTAL \$20,143  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Jefferys, W H                      HQ-SL/Brunk, W E                      11-Astronomy  
HQ-SL/Quaide, W L

**NSG 7480**                      **University of Texas - Austin**                      **4214**  
The cellular bases of gravity and light-induced geotropism  
*Period*    *Obligations*  
08/15/78-08/14/82                      FY81 \$45,000                      TOTAL \$155,000  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Roux, S J                      HQ-SB/Halstead, T                      51-Biological Sci

**NSG 7505**                      **University of Texas - Austin**                      **4215**  
Solid state problems in the solar systems  
*Period*    *Obligations*  
09/01/78-10/31/81                      FY81 \$87,685                      TOTAL \$237,659  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Smoluchowski, R                      HQ-SL/Quaide, W L                      32-Geological Sci  
HQ-SL/French, B M

**NSG 7557**                      **University of Texas - Austin**                      **4216**  
Morphogenetic studies of Martian channels  
*Period*    *Obligations*  
04/01/79-07/31/82                      FY81 \$39,944                      TOTAL \$105,944  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Baker, V                      HQ-SL/Boyce, J M                      32-Geological Sci  
HQ-SL/Holt, H E

**NSG 9021**                      **University of Texas - Austin**                      **4217**  
Origin of magnetization in lunar breccias and its bearing on their formation  
*Period*    *Obligations*  
02/01/75-02/29/80                      FY81                      TOTAL \$115,643  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Gose, W A                      JSC/Harris, J W                      32-Geological Sci

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NGT 44-089-980 Univ of Texas-Grad School of Biomed Sci 4218**  
Aerospace medicine residency program  
*Period* *Obligations*  
01/01/80-12/31/81 FY81 TOTAL \$28,097  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Key, M M HQ-SB/Nicogossian, A E  
56-Medical Sciences

**NAG 5-138 University of Texas - Dallas 4219**  
Research relative to plasma sheet processes associated with discrete auroral arcs  
*Period* *Obligations*  
02/01/81-01/31/82 FY81 \$22,000 TOTAL \$22,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Heikkila, W J GSFC/Spencer, N W 31-Atmos Sci

**NAGW 53 University of Texas - Dallas 4220**  
Studies of impulsive penetration and viscous interactions  
*Period* *Obligations*  
02/01/80-03/31/82 FY81 \$30,000 TOTAL \$57,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Heikkila, W J HQ-SC/Mayr, H G 19-Phys Sci, NEC  
HQ-SC/Schmerling, E R

**NAGW 64 University of Texas - Dallas 4221**  
Analysis of data from the Pioneer Venus sounder probe mass spectrometer  
*Period* *Obligations*  
04/01/80-02/28/82 FY81 \$20,000 TOTAL \$83,313  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hoffman, J H HQ-SL/Murphy, R E 31-Atmos Sci  
HQ-SL/Brunk, W E

**NAS 5-11406 University of Texas - Dallas 4222**  
Atmosphere Explorer magnetic ion mass spectrometer  
*Period* *Obligations*  
04/06/71-09/30/82 FY81 \$218,000 TOTAL \$1,966,866  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hoffman, J H GSFC/Bullock, G D 31-Atmos Sci

**NAS 5-11407 University of Texas - Dallas 4223**  
Planar ion trap experiment  
*Period* *Obligations*  
04/06/71-09/30/82 FY81 \$321,854 TOTAL \$2,353,933  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hanson, W B GSFC/Bullock, G D 31-Atmos Sci

**NAS 5-24297 University of Texas - Dallas 4224**  
Ion drift meter for the Dynamic Explorer  
*Period* *Obligations*  
07/26/77-08/31/81 FY81 \$26,531 TOTAL \$502,808  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Heelis, R A GSFC/Fellerman, K D. 13-Physics

**NAS 5-24298 University of Texas - Dallas 4225**  
Retarding potential analyzer for the Dynamic Explorer  
*Period* *Obligations*  
07/26/77-07/31/83 FY81 \$37,378 TOTAL \$532,082  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hanson, W B GSFC/Fellerman, K D 13-Physics  
Heelis, R A GSFC/Lidston, J M

**NAS 5-24299 University of Texas - Dallas 4226**  
Low altitude plasma instrument for Dynamics Explorer (DE)  
*Period* *Obligations*  
11/21/77-07/31/83 FY81 TOTAL \$852,062  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Winningham, J D GSFC/Fellerman, K D 13-Physics  
Klumpar, D M

**NAS 5-25310 University of Texas - Dallas 4227**  
Design, development, fabrication, test and calibration of the ion velocity instrument for the San Marco spacecraft  
*Period* *Obligations*  
09/18/78-04/30/83 FY81 \$13,664 TOTAL \$156,664  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hanson, W B GSFC/Caporale, A J 13-Physics

**NAS 5-26068 University of Texas - Dallas 4228**  
Ion drift meter instrument data analysis for Dynamics Explorer  
*Period* *Obligations*  
02/04/80-07/31/83 FY81 \$98,000 TOTAL \$116,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Heelis, R A GSFC/Skillman, D 41-Aero Engr

**NAS 5-26070 University of Texas - Dallas 4229**  
Low altitude plasma investigation data analysis for Dynamics Explorer  
*Period* *Obligations*  
02/10/80-07/31/84 FY81 TOTAL \$4,267  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Winningham, J D GSFC/Hoffman, R A 41-Aero Engr

**NAS 5-26071 University of Texas - Dallas 4230**  
Retarding potential analyzer instrument for Dynamics Explorer  
*Period* *Obligations*  
02/10/80-07/31/84 FY81 \$115,000 TOTAL \$133,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Hanson, W B GSFC/Skillman, D 41-Aero Engr

**NAS 5-26174 University of Texas - Dallas 4231**  
The study of ion convection electrodynamics for the upper atmosphere research satellites (UARS) program  
*Period* *Obligations*  
10/02/80-12/31/81 FY81 \$177,739 TOTAL \$177,739  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Heelis, R A GSFC/Piterski, N 31-Atmos Sci

# NASA'S UNIVERSITY PROGRAM

## TEXAS (Continued)

**NAS 5-26309**      **University of Texas - Dallas**      **4232**  
 Magsat science investigation      Investigation of the effects of  
 external current systems on the Magsat data utilizing grid cell  
 modeling techniques

<i>Period</i>	<i>Obligations</i>
09/15/80-07/14/82	FY81 \$21,500      TOTAL \$51,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Klumpar, D M	GSFC/Oseroff, H      32-Geological Sci
Kisabeth, J L	

**NAS 8-31775**      **University of Texas - Dallas**      **4233**  
 Study of ATS 6 and OGO 5 data analysis

<i>Period</i>	<i>Obligations</i>
03/18/76-12/31/81	FY81 \$2,000      TOTAL \$78,933
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hanson, W B	MSFC/Chappell, C R      MSFC/Fields, S A      19-Phys Sci, NEC

**NAS 8-32689**      **University of Texas - Dallas**      **4234**  
 Technology demonstration measurement for the molecular wake  
 shield

<i>Period</i>	<i>Obligations</i>
05/19/78-02/18/80	FY81      TOTAL \$29,969
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hoffman, J H	MSFC/Moore, W W      31-Atmos Sci
Hodges, R R	MSFC/Oran, W A

**NAS 8-32831**      **University of Texas - Dallas**      **4235**  
 Retarding ion mass spectrometer for Dynamics Explorer

<i>Period</i>	<i>Obligations</i>
01/17/78-10/31/83	FY81 \$131,572      TOTAL \$793,185
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hanson, W B	MSFC/Chappell, C R      13-Physics
Hoffman, J H	MSFC/Fields, S A

**NAS 8-33827**      **University of Texas - Dallas**      **4236**  
 Measurement of visible and UV emissions from energetic neutral  
 atom precipitation definition phase study

<i>Period</i>	<i>Obligations</i>
08/12/80-10/31/82	FY81 \$50,000      TOTAL \$110,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Tinsley, B A	MSFC/Jones, C T      31-Atmos Sci

**NAS 9-16044**      **University of Texas - Dallas**      **4237**  
 Cardiovascular adaption to zero gravity

<i>Period</i>	<i>Obligations</i>
01/17/80-01/31/82	FY81      TOTAL \$30,121
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Blomquist, C G	JSC/Peck, E E      59-Life Sci, NEC

**NGL 44-004-026**      **University of Texas - Dallas**      **4238**  
 Investigations into the mechanism and rates of atmospheric mixing  
 in the lower thermosphere

<i>Period</i>	<i>Obligations</i>
05/05/65-03/31/82	FY81 \$104,347      TOTAL \$2,582,431
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hanson, W B	HQ-SL/Murphy, R E      31-Atmos Sci
	HQ-SL/Brunk, W E

**NGL 44-004-130**      **University of Texas - Dallas**      **4239**  
 Selected studies in the space sciences

<i>Period</i>	<i>Obligations</i>
03/17/72-03/31/82	FY81 \$250,000      TOTAL \$2,200,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hanson, W B	HQ-SP/Taylor, T C      99-Multi-Discip
Hoffman, J H	HQ-SP/Heninger, L W
McClure, J P	

**NGR 44-004-120**      **University of Texas - Dallas**      **4240**  
 Rocket probes for the upper F-region

<i>Period</i>	<i>Obligations</i>
02/09/71-01/31/82	FY81 \$95,000      TOTAL \$1,225,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hanson, W B	HQ-SC/Mayr, H G      31-Atmos Sci
	HQ-SC/Schmerling, E R

**NGR 44-004-124**      **University of Texas - Dallas**      **4241**  
 Rocket investigation of auroral zone disturbances

<i>Period</i>	<i>Obligations</i>
08/10/71-09/30/80	FY81      TOTAL \$1,086,112
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Winningham, J D	GSFC/Guidotti, J      13-Physics
Heikkila, W J	
Eaker, N	

**NSG 5085**      **University of Texas - Dallas**      **4242**  
 Particle spectrometer on board ISIS-2

<i>Period</i>	<i>Obligations</i>
11/01/75-01/31/82	FY81 \$30,000      TOTAL \$215,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Heikkila, W J	GSFC/Brace, L H      31-Atmos Sci
Klumpar, D M	

**NSG 5087**      **University of Texas - Dallas**      **4243**  
 Ion composition research on ISIS-2

<i>Period</i>	<i>Obligations</i>
12/01/75-03/31/82	FY81 \$25,000      TOTAL \$165,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Hoffman, J H	GSFC/Brace, L H      31-Atmos Sci
Dodson, W H	

**NSG 5280**      **University of Texas - Dallas**      **4244**  
 Electrodynamic coupling in the ionosphere magnetosphere  
 system

<i>Period</i>	<i>Obligations</i>
07/01/78-01/31/82	FY81 \$25,000      TOTAL \$74,178
<i>Prin Invest</i>	<i>NASA Tech Officer</i> <i>CASE Category</i>
Klumpar, D M	GSFC/Spencer, N W      31-Atmos Sci

## NASA'S UNIVERSITY PROGRAM

### TEXAS (Continued)

NSG 7034	University of Texas - Dallas	4245
Investigation of the daytime lunar atmosphere for lunar synthesis program		
<i>Period</i>	<i>Obligations</i>	
04/01/74-03/31/82	FY81 \$58,000	TOTAL \$399,133
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hodges, R R , Jr	HQ-SL/Quaide, W L	31-Atmos Sci
	HQ-SL/French, B E	

NSG 7599	University of Texas - Dallas	4246
Continued analysis of data from the Viking retarding potential analyzer (RPA's)		
<i>Period</i>	<i>Obligations</i>	
03/01/79-12/31/81	FY81	TOTAL \$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hanson, W B	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

<b>NAGW 204</b>	<b>University of Texas - El Paso</b>	<b>4247</b>
<b>A theoretical model study of tidal stress and other heating mechanisms of Io</b>		
<i>Period</i>	<i>Obligations</i>	
05/20/81-05/19/82	FY81 \$34,626	TOTAL \$34,626
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lawson, J O	HQ-SL/Quaide, W L	13-Physics
Bruce, R E	HQ-LC/Pohly, J G	

NAS 5-26326		University of Texas - El Paso	4248
Application of Magsat to lithospheric modeling in South America, Synthesis of geologic and seismic data for development of integrated crustal models for development of integrated crustal models			
<i>Period</i>	<i>Obligations</i>		
10/02/80-02/02/83	FY81	\$40,000	TOTAL \$40,000
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Keller, E R	GSFC/Oseroff, H		32-Geological Sci
Lidiak, E G			

NCC 4-4		University of Texas - El Paso		4249
Research on the application of electrical and information technologies to flight testing				
Period		Obligations		
09/01/81-08/31/82	FY81	\$60,197	TOTAL	\$60,197
<i>Prn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Riter, S	DFRC/Albers, J A		41-Aero Engr	

NSG 9062	University of Texas - El Paso	4250
Occurrence and mineral chemistry of high pressure phases		
<i>Period</i>		<i>Obligations</i>
06/01/78-05/31/82	FY81	TOTAL \$47,374
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hoffer, J M	JSC/Duke, M	12-Chemistry

NAG 2-26		Univ of Texas Medical Branch - Galveston		4251
Central otolithic mechanisms in non-human primates				
Period		Obligations		
01/01/80-12/31/81	FY81	\$40,003	TOTAL	\$70,103
Prin Invest	VASA Tech	Officer	CASE Category	
Perachio, A A	ARC/Daunton, N	G	51-Biological Sci	
Carreta, M J				

<b>NAS 2-10502      Univ of Texas Medical Branch - Galveston      4252</b> <b>Anatomical and electrophysiological studies of the effects of</b> <b>weightlessness on the vestibular apparatus of the gerbil</b>		
<i>Period</i>	<i>Obligations</i>	
01/17/80-09/30/81	FY81	TOTAL \$38,503
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Correia, M J	ARC/Ferandin, J	51-Biological Sci
Eden, A R	ARC/Donaldson, R	

NAS 2-10513		Univ of Texas Medical Branch - Galveston	4253
Influence of spaceflight on cytogenetics and mutagenicity			
Period		Obligations	
01/17/80-09/30/81	FY81	TOTAL	\$12,090
Prin Invest	NASA Tech Officer	CASE Category	
Fabricant, J D	ARC/Ferandin, J	51-Biological Sci	
	ARC/Sebesta, P		

<b>NAS 5-25897</b>	<b>Univ of Texas Medical Branch - Galveston</b>	<b>4254</b>
Earth strain measurements with transportable laser ranging system		
Field techniques and planning laser geodynamics		
<i>Period</i>		<i>Obligations</i>
12/14/79-03/14/82	FY81	TOTAL \$55,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dorman, H J	GSFC/Stephanides, C C	32-Geological Sci

Period		Obligations
05/01/75-03/31/82	FY81 \$77,500	TOTAL \$277,850
<i>Prin Invest</i>	<i>VASA Tech Officer</i>	<i>CASE Category</i>
Correia, M J	JSC/Reschke, M F	69-Psych, NEC

NGT 44-088-800 Univ of Texas Medical Branch - Galveston		4256
Graduate student researchers program		
<i>Period</i>	<i>Obligations</i>	
09/01/81-08/31/82	FY81 \$13,000	TOTAL \$13,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Correia, M J	HQ-LC/Carter, C H	51-Biological Sci

NSG 7418	Univ of Texas Medical Branch - Galveston	4257
Lunar seismic data analysis		
<i>Period</i>	<i>Obligations</i>	
02/01/78-01/31/82	FY81 \$100,000	TOTAL \$739,378
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Makamura, Y	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B E	

**NASA'S UNIVERSITY PROGRAM**  
**TEXAS (Continued)**

**NAGW 140** Univ of Texas, Health Sci Ctr-Dallas **4258**  
Influence of suspension-hypokinesia on skeletal muscle  
*Period* *Obligations*  
02/01/81-01/31/82 FY81 \$51,499 TOTAL \$51,499  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Templeton, G H HQ-SB/Halstead, T W 51-Biological Sci  
Sutko, J L

**NSG 9026** Univ of Texas, Health Sci Ctr-Dallas **4259**  
Cardiovascular effect of variations in habitual levels of physical activity  
*Period* *Obligations*  
03/01/75-05/31/82 FY81 \$81,580 TOTAL \$389,930  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Blomquist, C G JSC/Bungo, M 56-Medical Sciences

**NAS 2-10500** Univ of Texas-Hlth Science Ctr-Houston **4260**  
Etiology of deconditioning of antigravity muscle in rats during weightlessness  
*Period* *Obligations*  
01/17/80-09/30/81 FY81 \$2,000 TOTAL \$10,432  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Booth, F W ARC/Rasmussen, D 51-Biological Sci  
ARC/Sebesta, P

**NAS 9-15388** Univ of Texas-Hlth Science Ctr-Houston **4261**  
Biochemical adaptation of antigravity muscle fibers to disuse atrophy  
*Period* *Obligations*  
08/01/77-11/15/81 FY81 \$30,000 TOTAL \$116,350  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Booth, F JSC/Smith, M 51-Biological Sci

**NAG 9-5** Univ of Texas-Hlth Sci Ctr-San Antonio **4262**  
The effect of stress on human blood platelets  
*Period* *Obligations*  
03/01/80-04/30/82 FY81 \$54,000 TOTAL \$104,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
George, J N JSC/Leach, C S 56-Medical Sciences

**NAS 9-16366** Univ of Texas-Hlth Sci Ctr-San Antonio **4263**  
Quantitation of renal prostaglandins  
*Period* *Obligations*  
04/27/81-04/30/82 FY81 \$35,000 TOTAL \$35,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Lifschitz, M JSC/Leach, C 56-Medical Sciences

**NAS 8-32584** University of Texas at San Antonio **4264**  
Atmosphere Explorer data analysis and electrodynamics Explorer instrument development  
*Period* *Obligations*  
06/15/77-01/31/80 FY81 TOTAL \$28,423  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Burch, J L MSFC/Chappell, C 31-Atmos Sci  
MSFC/Thomas, P E

**NSG 5418** University of Texas at San Antonio **4265**  
Solar-wind and magnetospheric electric fields and plasmas  
*Period* *Obligations*  
10/01/79-03/31/81 FY81 TOTAL \$18,269  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Burch, J L GSFC/Spencer, N W 31-Atmos Sci

**UTAH**

**NAG 5-62** Brigham Young University **4266**  
Ultraviolet studies of the components of Cepheid variables  
*Period* *Obligations*  
06/01/80-09/30/81 FY81 TOTAL \$8,092  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
McNamara, D H GSFC/Boggess, A 11-Astronomy  
Feltz, K

**NAS 2-7358** Brigham Young University **4267**  
Pioneer F/G data analysis of the solar terrestrial relations portion of the magnetic field experiment  
*Period* *Obligations*  
00/00/00-08/31/81 FY81 \$17,500 TOTAL \$96,400  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Jones, D E ARC/Fimmel, R O 13-Physics  
ARC/Dyer, J

**NAS 5-26473** Brigham Young University **4268**  
Heat capacity mapping mission (HCMM) data continuing schematic design and scientific applications and FDT support  
*Period* *Obligations*  
02/24/81-02/23/82 FY81 \$26,730 TOTAL \$26,730  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Miller, W GSFC/Gordon, F 39-Env Sci, NEC

**NAG 2-108** University of Utah **4269**  
Mechanisms of action of glucocorticosteroids and fluoride ion on the growing skeleton  
*Period* *Obligations*  
05/01/81-04/30/82 FY81 \$95,000 TOTAL \$95,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Jee, W S ARC/Holton, E M 51-Biological Sci  
Woodbury, D M

**NAG 3-27** University of Utah **4270**  
Carbon-13 NMR analysis of shale oils and shale oil derived jet fuels  
*Period* *Obligations*  
03/01/80-02/27/82 FY81 \$101,047 TOTAL \$163,047  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Ursenbach, W O LERC/Seng, G T 12-Chemistry  
Pugmire, R J

## NASA'S UNIVERSITY PROGRAM

### UTAH (Continued)

NAG 5-127	University of Utah	4271
Global scale diagnosis of satellite data		
<i>Period</i>	<i>Obligations</i>	
07/01/81-06/30/82	FY81 \$25,000	TOTAL \$25,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Paele, J	GSFC/Rivas, E	31-Atmos Sci

NAG 5-164		University of Utah	4272
Study of tectonic activity in the basin and range province and the San Andres fault system			
Period	Obligations		
04/15/81-04/14/82	FY81	\$30,000	TOTAL \$30,000
Prin Invest	NASA Tech Officer		CASE Category
Smith, R B	GSFC/Lowman, P D		32-Geological Sci

NAG 6-15		University of Utah		4273	
Development work on meteorological data processing firmware					
<i>Period</i>		<i>Obligations</i>			
05/15/81-01/14/82	FY81	\$45,000	TOTAL		\$45,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>		
Staffanson, F L	WFC/Snyder, R N	19-Phys Sci, NEC			
	WFC/West, W W				

<b>NAGW 11</b>	<b>University of Utah</b>	<b>4274</b>
<b>Irregular satellites and Trojan asteroids study</b>		
<i>Period</i>	<i>Obligations</i>	
<b>11/01/79-07/01/81</b>	<b>FY81</b>	<b>TOTAL \$7,492</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Shorthill, R W</b>	<b>HQ-SL/Brunk, W E</b>	<b>11-Astronomy</b>

<b>NAGW 82</b>	<b>University of Utah</b>	<b>4275</b>
An experimental investigation of the angular scattering and backscattering behavior of the simulated clouds of the outer planets		
<i>Period</i>	<i>Obligations</i>	
06/01/80-09/30/82	FY81 \$24,000	TOTAL \$73,687
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sassen, K	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

<b>NAGW 95</b>	<b>University of Utah</b>	<b>4276</b>
<b>Identifying environmental features for land management decisions</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/01/80-07/31/84</b>	<b>FY81 \$100,000</b>	<b>TOTAL \$200,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Ursenbach, W O</b>	<b>HQ-ET/Vitale, J A</b>	<b>39-Env Sci, NEC</b>
<b>Ridd, M K</b>		

NAS 5-25373		University of Utah	4277
Linear and nonlinear interactions of the large scale atmospheric waves			
Period	Obligations		
11/27/78-08/31/81	FY81	\$8,533	TOTAL \$84,929
Prin Invest	NASA Tech Officer		CASE Category
Kao, S K	GSFC/Greaves, J R		31-Atmos Sci
	GSFC/Shulka, J		

<b>NAS 8-33992</b>		<b>University of Utah</b>	<b>4278</b>
Development, integration, mission support and data analysis of the imaging spectrometric observatory experiment for Spacelab mission I			
<i>Period</i>		<i>Obligations</i>	
07/25/80-09/30/83	FY81	\$359,000	TOTAL \$439,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Torr, M R	MSFC/Jones, C T		31-Atmos Sci
	MSFC/Ise, R		

NCA 2-821001	University of Utah	4279
Light scattering by nonspherical particles		
<i>Period</i>	<i>Obligations</i>	
03/15/80-06/30/81	FY81	TOTAL \$18,187
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Liou, K	ARC/Pollack, J B	31-Atmos Sci
Coleman, R F	ARC/Cuzzi, J N	

NGT 45-003-800		University of Utah	4280
Graduate student researchers program			
<i>Period</i>		<i>Obligations</i>	
06/01/81-05/31/82	FY81	\$11,900	TOTAL \$11,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Nielson, H C	HQ-LC/Carter, C H		61-Biol Aspects

NSG 1534	University of Utah	4281
Fluid dynamics of crystallization from vapors		
<i>Period</i>		<i>Obligations</i>
06/01/78-09/30/81	FY81 \$110,061	TOTAL \$302,564
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Rosenberger, F E	LARC/Fripp, A L	47-Materials Engr
	LARC/Crouch, R K	

<b>NSG 7226</b>	<b>University of Utah</b>	<b>4282</b>
Identifying environmental features for land management decisions		
<i>Period</i>	<i>Obligations</i>	
08/01/76-07/31/82	FY81	TOTAL \$500,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Ridd, M K	HQ-ET/Vitale, J A	39-Env Sci, NEC

NSG 7516	University of Utah	4283
Mechanistic studies of prebiotic chemistry		
<i>Period</i>	<i>Obligations</i>	
10/01/78-12/31/81	FY81	TOTAL \$108,900
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Guillory, W A	HQ-SB/Devincenzi, D L	12-Chemistry

<b>NAG 5-121</b>	<b>Utah State University</b>	<b>4284</b>
<b>A study of atmosphere-ionosphere-magnetosphere coupling</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/01/80-12/31/81</b>	<b>FY81</b>	<b>TOTAL \$25,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Raitt, W J</b>	<b>GSFC/Corrigan, J P</b>	<b>11-Astronomy</b>

**NASA'S UNIVERSITY PROGRAM**  
**UTAH (Continued)**

**NAGW 77** **Utah State University** **4285**  
The flow of plasma in the solar terrestrial environment  
*Period* *Obligations*  
07/01/80-06/30/82 **FY81 \$156,000 TOTAL \$304,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Schunk, R W HQ-SC/Birmingham, T J 13-Physics  
HQ-SC/Newton, G P

**NAGW 105** **Utah State University** **4286**  
A study of magnetospheric/ionospheric/atmospheric coupling via energetic heavy ions  
*Period* *Obligations*  
11/01/80-10/31/81 **FY81 \$34,000 TOTAL \$34,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Torr, M R HQ-SC/Mavr, H G 19-Phys Sci, NEC  
HQ-SC/Schmerling, E R

**NAGW 119** **Utah State University** **4287**  
Innovative projects in electromagnetism  
*Period* *Obligations*  
11/15/80-11/14/81 **FY81 \$40,950 TOTAL \$40,950**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Torr, D G HQ-SP/Taylor, T C 13-Physics  
Edwards, W F HQ-SP/Heninger, L W

**NAS 5-24455** **Utah State University** **4288**  
Investigations of vehicle charging and potential (VCAP) on orbital flight test four experiment  
*Period* *Obligations*  
03/01/78-04/30/83 **FY81 \$366,000 TOTAL \$1,371,729**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Banks, P M GSFC/Eiband, A M 13-Physics  
Raitt, J GSFC/Cyphers, H

**NAS 5-26171** **Utah State University** **4289**  
Study of the imaging stratospheric ultraviolet spectrometer for the upper atmosphere research satellite (UARS)  
*Period* *Obligations*  
09/24/80-12/31/81 **FY81 \$76,334 TOTAL \$331,916**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Torr, D G GSFC/Browne, W H, Jr 31-Atmos Sci

**NAS 8-32636** **Utah State University** **4290**  
Large spacecraft interaction with ambient environment at geosynchronous Earth orbit charging  
*Period* *Obligations*  
09/20/77-09/30/81 **FY81 TOTAL \$116,577**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Raitt, W J MSFC/Chappell, C R 31-Atmos Sci

**NAS 8-33381** **Utah State University** **4291**  
Studies related to electro-dynamics of the tethered subsatellite system  
*Period* *Obligations*  
04/16/79-06/11/80 **FY81 TOTAL \$51,067**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Williamson, P R MSFC/Johnson, W G 31-Atmos Sci  
MSFC/Lundquist, C A

**NAS 8-33383** **Utah State University** **4292**  
Establish a tethered subsatellite facility definition team  
*Period* *Obligations*  
05/07/79-07/31/80 **FY81 TOTAL \$48,330**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Banks, P M MSFC/Johnson, W G 31-Atmos Sci  
MSFC/Stone, N H

**NAS 8-34003** **Utah State University** **4293**  
Research study Interactive experiments study  
*Period* *Obligations*  
08/01/80-01/31/82 **FY81 TOTAL \$72,500**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Banks, P M MSFC/Chappell, C R 13-Physics  
MSFC/Fields, S A

**NAS 9-14871** **Utah State University** **4294**  
Higher plant response to elevated ultraviolet irradiance  
*Period* *Obligations*  
10/08/75-12/31/81 **FY81 \$60,000 TOTAL \$519,841**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Caldwell, M M JSC/Nachtwey, D S 54-Env Biology

**NCC 2-139** **Utah State University** **4295**  
Studies on maximum yield of wheat and other small grains in controlled environments  
*Period* *Obligations*  
05/01/81-04/30/82 **FY81 \$78,500 TOTAL \$78,500**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Salisbury, F B ARC/Zill, L P 55-Agriculture Sci  
Albrechtsen, R S  
Campbell, W F

**NSG 5215** **Utah State University** **4296**  
Studies of high latitude ion dynamics  
*Period* *Obligations*  
10/01/77-12/31/81 **FY81 \$24,974 TOTAL \$67,354**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
St Maurice, J P GSFC/Spencer, N W 13-Physics  
Banks, P M  
Sojka, J

**NSG 5216** **Utah State University** **4297**  
Investigation of electric fields in the vicinity of plasmopause mid-latitude trough and polar cleft  
*Period* *Obligations*  
10/01/77-12/31/81 **FY81 \$23,500 TOTAL \$63,800**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Foster, J C GSFC/Spencer, N W 13-Physics  
Doupnik, J R

# NASA'S UNIVERSITY PROGRAM

## UTAH (Continued)

**NSG 6027** **Utah State University** **4298**  
 An investigation of current collection processes in the ionospheric plasma at high potential  
*Period* *Obligations*  
 03/01/79-04/16/82 FY81 \$70,000 TOTAL \$186,400  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Williamson, P R WFC/Early, L J 19-Phys Sci, NEC  
 WFC/Pless, R H

**NSG 7038** **Utah State University** **4299**  
 The diagenesis of geologically important organic matter and amino acids under simulated natural conditions  
*Period* *Obligations*  
 06/01/74-05/30/82 FY81 \$59,574 TOTAL \$454,787  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Smith, G G HQ-SB/Devincenzi, D L  
 32-Geological Sci

**NSG 7289** **Utah State University** **4300**  
 Study of the dynamics of atmosphere-ionosphere-magnetosphere interactions  
*Period* *Obligations*  
 07/01/76-06/30/81 FY81 \$122,000 TOTAL \$490,686  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Banks, P M HQ-SC/Mayr, H G 31-Atmos Sci  
 HQ-SC/Schmerling, E

**NSG 7567** **Utah State University** **4301**  
 An examination of the clinostat problem using leafy plants  
*Period* *Obligations*  
 07/01/71-06/30/82 FY81 \$35,000 TOTAL \$86,442  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Salisbury, F B HQ-SB/Halstead, T W 51-Biological Sci

**NAGW 19** **Weber State College** **4302**  
 Mass flow velocity distributions in the solar chromosphere  
*Period* *Obligations*  
 01/01/80-09/30/81 FY81 TOTAL \$19,521  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Tripp, D A HQ-SC/Chipman, E 13-Physics

## VERMONT

**NAG 8-389** **Middlebury College** **4303**  
 Investigations of the Puppis A X-ray emission line spectrum  
*Period* *Obligations*  
 12/08/80-12/07/81 FY81 \$18,339 TOTAL \$18,339  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Winkler, P F , Jr MSFC/Stone, J F 11-Astronomy

**NAGW 54** **Middlebury College** **4304**  
 Structure of field rotating disturbances in warm plasma  
*Period* *Obligations*  
 03/01/80-08/31/82 FY81 TOTAL \$10,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Wolfson, L T HQ-SC/Hedin, A E 19-Phys Sci, NEC

**NAS 8-33335** **Middlebury College** **4305**  
 Study of supernova remnant  
*Period* *Obligations*  
 03/08/79-03/07/80 FY81 TOTAL \$9,168  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Winkler, P F , Jr MSFC/Jones, J B , Jr 11-Astronomy

**NSG 7453** **Univ of Vermont & St Agricultural Col** **4306**  
 Development of a remote sensing applications program in Vermont  
*Period* *Obligations*  
 06/01/78-05/31/84 FY81 \$150,000 TOTAL \$550,000  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Whitmore, R A HQ-ET/Vitale, J A 32-Geological Sci

## VIRGINIA

**NSG 1514** **Christopher Newport College** **4307**  
 An investigation of semiconductor electrodes  
*Period* *Obligations*  
 09/01/78-12/31/81 FY81 \$33,000 TOTAL \$89,737  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Buoncristiani, A M LARC/Byvik, C E 13-Physics  
 LARC/Conway, E J

**NSG 1614** **Christopher Newport College** **4308**  
 Theoretical study of radiation effects in composite materials for space use  
*Period* *Obligations*  
 07/01/79-01/31/82 FY81 \$30,525 TOTAL \$101,475  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Chang, C K LARC/Wilson, J W 19-Phys Sci, NEC  
 LARC/Conway, E J

**NAG 1-62** **College of William And Mary** **4309**  
 Definition of the operational semantics of ADA  
*Period* *Obligations*  
 05/01/80-08/31/81 FY81 TOTAL \$23,608  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Feyock, S LARC/Harris, J L 22-Computer Science

**NAG 1-109** **College of William And Mary** **4310**  
 Numerical methods for viscous flows  
*Period* *Obligations*  
 11/01/80-09/30/81 FY81 \$18,104 TOTAL \$18,104  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
 Zang, T A LARC/Bushnell, D M 41-Aero Engr  
 LARC/Hefner, J N



**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-144** College of William And Mary **4311**  
Liquid crystallinity in semi-rigid polymers and in model compounds

Period	Obligations
02/15/81-02/14/82	FY81 \$35,774 TOTAL \$35,774
Prin Invest	NASA Tech Officer CASE Category
Orwoll, R A	LARC/Stclair, T L 12-Chemistry

**NAG 1-209** College of William And Mary **4312**  
Optimal attitude reorientation of space vehicles

Period	Obligations
08/11/81-08/31/82	FY81 \$15,566 TOTAL \$15,566
Prin Invest	NASA Tech Officer CASE Category
Rublein, G T	LARC/Price, D B 42-Astro Engr

**NCC 1-3** College of William And Mary **4313**  
Atmos Spacelab science investigation

Period	Obligations
05/01/79-09/30/82	FY81 TOTAL \$78,000
Prin Invest	NASA Tech Officer CASE Category
Rinsland, C P	LARC/Sullivan, E M 31-Atmos Sci
	LARC/Russell, J M , III

**NCC 1-16** College of William And Mary **4314**  
Analysis of remote sensors for pollution

Period	Obligations
08/01/79-09/30/82	FY81 TOTAL \$48,361
Prin Invest	NASA Tech Officer CASE Category
Rinsland, C P	LARC/Sullivan, E M 31-Atmos Sci
	LARC/Russell 1, J M

**NCC 1-40** College of William And Mary **4315**  
Tire nonlinear model

Period	Obligations
04/16/80-05/15/82	FY81 \$72,045 TOTAL \$127,845
Prin Invest	NASA Tech Officer CASE Category
Anderson, C M	LARC/Tanner, J A 46-Mech Engr

**NCC 1-43** College of William And Mary **4316**  
Halogen occultation experiment (HALOE) science investigation

Period	Obligations
08/01/80-12/31/81	FY81 TOTAL \$28,600
Prin Invest	NASA Tech Officer CASE Category
Rinsland, C P	LARC/Sullivan, E M 31-Atmos Sci
	LARC/Russell, J M

**NSG 1095** College of William And Mary **4317**  
Molecular weight-property relationships of high performance polymers used for adhesives and composites

Period	Obligations
09/01/74-02/28/82	FY81 \$10,000 TOTAL \$110,482
Prin Invest	NASA Tech Officer CASE Category
Kranbuehl, D E	LARC/Johnston, N J 12-Chemistry
	LARC/Burks, H D

**NSG 1435** College of William And Mary **4318**  
Development of a multi-target compiler writing system

Period	Obligations
07/11/77-12/31/82	FY81 \$74,564 TOTAL \$385,392
Prin Invest	NASA Tech Officer CASE Category
Noonan, R E	LARC/Senn, E H 21-Mathematics
Donegan, M K	LARC/Voigt, S J

**NSG 1625** College of William And Mary **4319**  
Methodologies for optimizing maintenance models for advanced avionics control systems

Period	Obligations
09/01/79-08/31/82	- FY81 \$33,146 TOTAL \$92,622
Prin Invest	NASA Tech Officer CASE Category
Schaefer, M K	LARC/Finelli, G B 49-Engr, NEC

**NSG 1626** College of William And Mary **4320**  
Investigation of portability techniques for a large flight-oriented programming language

Period	Obligations
06/01/79-08/31/82	FY81 \$58,570 TOTAL \$143,645
Prin Invest	NASA Tech Officer CASE Category
Feyock, S	LARC/Foudriat, E C
	LARC/Will, R W 22-Computer Science

**NSG 7416** College of William And Mary **4321**  
Research on turbulence in plasmas

Period	Obligations
12/01/77-11/30/82	FY81 \$85,000 TOTAL \$155,900
Prin Invest	NASA Tech Officer CASE Category
Montgomery, D C	HQ-SC/Mayr, H G 19-Phys Sci, NEC
	HQ-SC/Schmerling, E R

**NAS 6-2964** Eastern Shore Community College **4322**  
Provide a public information program

Period	Obligations
01/01/79-12/31/81	FY81 \$15,905 TOTAL \$45,621
Prin Invest	NASA Tech Officer CASE Category
Layman, P	WFC/Milliner, J B 99-Multi-Discip
	WFC/Gladding, M T

**NAG 5-124** George Mason University **4323**  
Data analysis of soft X-ray observations with High Energy Astronomical Observatory-2 of late type stars

Period	Obligations
10/01/80-09/30/81	FY81 TOTAL \$9,966
Prin Invest	NASA Tech Officer CASE Category
Kafatos, M	GSFC/Michaltsianos, A G
	GSFC/Hobbs, R W 11-Astronomy

# **NASA'S UNIVERSITY PROGRAM** **VIRGINIA (Continued)**

**NAG 5-148**                      **George Mason University**                      **4324**  
Theory of decentralized control of Markovian decision models

<i>Period</i>	<i>Obligations</i>	
03/01/81-02/28/82	FY81 \$12,055	TOTAL \$12,055
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Greenland, A	GSFC/Larsen, R L	
	GSFC/Ondrus, P J	
	29-Math Computer Sci, NEC	

**NCA 5-92**                      **George Mason University**                      **4325**  
Study of forbidden line emission from abundant heavy element ions in hot nebulae

<i>Period</i>	<i>Obligations</i>	
08/01/78-08/15/82	FY81	TOTAL \$4,700
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kafatos, M	GSFC/Hobbs, R W	11-Astronomy

**NSG 5371**                      **George Mason University**                      **4326**  
Observation of circumstellar shells around cool giants and supergiants

<i>Period</i>	<i>Obligations</i>	
06/01/79-09/30/82	FY81 \$8,794	TOTAL \$32,380
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kafatos, M	GSFC/Boggess, A	11-Astronomy

**NSG 5403**                      **George Mason University**                      **4327**  
Interpretation of survey work of supernova shocks, bubbles and studying variability of active galaxies

<i>Period</i>	<i>Obligations</i>	
07/01/79-10/31/80	FY81	TOTAL \$14,171
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kafatos, M	GSFC/Gull, T R	11-Astronomy
	GSFC/Boggess, A	

**NAG 1-69**                      **Hampton Institute**                      **4328**  
Generation of cost and fuel optimal vertical flight profiles

<i>Period</i>	<i>Obligations</i>	
06/01/80-02/28/82	FY81 \$14,027	TOTAL \$23,640
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wiggs, J F	LARC/Samms, K H	41-Aero Engr
	LARC/Morello, S A	

**NAG 1-87**                      **Hampton Institute**                      **4329**  
Local effects of partly cloudy skies on solar and emitted radiation

<i>Period</i>	<i>Obligations</i>	
08/01/80-03/31/82	FY81 \$87,795	TOTAL \$215,189
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Venable, D D	LARC/Young, G R	31-Atmos Sci
Whitney, D A		

**NAG 1-122**                      **Hampton Institute**                      **4330**  
Absorption of humic acids and trace metals in natural waters

<i>Period</i>	<i>Obligations</i>	
12/01/80-11/30/82	FY81 \$58,129	TOTAL \$58,129
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Leung, W H	LARC/Harris, R C	39-Env Sci, NEC
	LARC/Whitlock, C H	

**NAG 1-161**                      **Hampton Institute**                      **4331**  
Investigation of heterodyne applications to remote sensing

<i>Period</i>	<i>Obligations</i>	
04/01/81-06/30/82	FY81 \$57,280	TOTAL \$57,280
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tai, M H	LARC/Katzberg, S J	39-Env Sci, NEC

**NAS 1-14832**                      **Hampton Institute**                      **4332**  
Summer research fellowship program

<i>Period</i>	<i>Obligations</i>	
02/04/77-01/31/81	FY81	TOTAL \$209,272
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Darden, G C	LARC/Erickson, W D	19-Phys Sci, NEC

**NAS 1-15877**                      **Hampton Institute**                      **4333**  
Experimental and theoretical investigations of freestream noise in supersonic nozzles and its effects on boundary layer stability and transition

<i>Period</i>	<i>Obligations</i>	
07/11/79-10/01/80	FY81	TOTAL \$44,409
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anywo, J C	LARC/Beckwith, I E	41-Aero Engr
Schopper, M R	LARC/Bushnell, D M	

**NAS 1-16429**                      **Hampton Institute**                      **4334**  
Conversion of flight records

<i>Period</i>	<i>Obligations</i>	
10/01/80-12/31/81	FY81 \$30,208	TOTAL \$30,208
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Williams, E	LARC/Jewel, J W	41-Aero Engr
	LARC/Hall, A W	

**NAS 1-16455**                      **Hampton Institute**                      **4335**  
Summer research fellowship program

<i>Period</i>	<i>Obligations</i>	
11/07/80-01/21/82	FY81 \$63,949	TOTAL \$63,949
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Darden, G C	LARC/Erickson, W D	99-Multi-Discip
	LARC/Foughner, J T	

**NCC 1-7**                      **Hampton Institute**                      **4336**  
Complex vector operations on star computer with applications to linear algebra problems linear systems of linear equations

<i>Period</i>	<i>Obligations</i>	
04/15/79-02/15/82	FY81 \$27,475	TOTAL \$83,956
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Shan, S N	LARC/Hagler, G W	21-Mathematics
	LARC/Lambiotte, J J	

**NCC 1-11**                      **Hampton Institute**                      **4337**  
Radiative transfer model for remote sensing of laser-induced fluorescence of phytoplankton in non-homogeneous turbid waters

<i>Period</i>	<i>Obligations</i>	
05/01/79-09/30/81	FY81	TOTAL \$49,412
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Venable, D D	LARC/Poole, L R	39-Env Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NSG 1294 Hampton Institute 4338**  
A study of digital techniques for high-speed processing of detector array data  
*Period Obligations*  
04/01/76-09/30/80 FY81 TOTAL \$159,641  
*Prin Invest NASA Tech Officer CASE Category*  
Trehan, A K LARC/Jobson, D J 45-Elec Engr  
LARC/Katzberg, S J

**NSG 1552 Hampton Institute 4339**  
Investigation of microprocessors for use as controllers for tunable diode lasers  
*Period Obligations*  
07/24/78-09/23/80 FY81 TOTAL \$71,485  
*Prin Invest NASA Tech Officer CASE Category*  
Trehan, A K LARC/Katzberg, S J 45-Elec Engr  
Davenport, J E LARC/Kowitz, H R

**NSG 1595 Hampton Institute 4340**  
Studies of new media for radiation induced lasers  
*Period Obligations*  
02/01/79-05/31/82 FY81 \$41,607 TOTAL \$122,143  
*Prin Invest NASA Tech Officer CASE Category*  
Han, K S LARC/Jalufka, N W 13-Physics

**NAS 1-16361 Norfolk State University 4341**  
Documentation and research support in the use of MACSYMA  
*Period Obligations*  
08/12/80-08/11/81 FY81 TOTAL \$17,082  
*Prin Invest NASA Tech Officer CASE Category*  
Deloatch, S J LARC/Shoosmith, J N  
29-Math Computer Sci, NEC

**NAG 1-1 Old Dominion University 4342**  
Performance improvement of lead-tin-selenium (Pb-XSnXSe) semiconductor lasers through use of frequency selective optical feedback  
*Period Obligations*  
10/25/79-03/15/82 FY81 \$64,943 TOTAL \$121,712  
*Prin Invest NASA Tech Officer CASE Category*  
Copeland, G E LARC/Hoell, J M 13-Physics  
Harward, C N LARC/Bair, C H

**NAG 1-15 Old Dominion University 4343**  
Propagation of sound through the Earth's atmosphere  
*Period Obligations*  
01/01/80-06/30/81 FY81 TOTAL \$59,245  
*Prin Invest NASA Tech Officer CASE Category*  
Zuckerwar, A J LARC/Holmes, H K 13-Physics  
Becher, J

**NAG 1-21 Old Dominion University 4344**  
Radiative transfer models for the Earth radiation budget studies  
*Period Obligations*  
01/01/80-12/31/81 FY81 \$46,727 TOTAL \$92,315  
*Prin Invest NASA Tech Officer CASE Category*  
Tiwari, S N LARC/Young, G R 31-Atmos Sci  
Subramaniam, S V LARC/Raper, J L

**NAG 1-25 Old Dominion University 4345**  
Spectral multigrid methods for the two dimensional compressible Navier-Stokes equations with nonperiodic boundary conditions  
*Period Obligations*  
06/01/80-08/31/81 FY81 TOTAL \$38,695  
*Prin Invest NASA Tech Officer CASE Category*  
Lakin, W D LARC/Harris, J E 21-Mathematics  
Lustman, L LARC/Bushnell, D M

**NAG 1-47 Old Dominion University 4346**  
A retargetable path Pascal system for implementation on concurrent programs on 16-bit microcomputers  
*Period Obligations*  
03/05/80-08/31/81 FY81 TOTAL \$48,805  
*Prin Invest NASA Tech Officer CASE Category*  
Knapper, R J LARC/Foudriat, E C  
LARC/Will, R W 22-Computer Science

**NAG 1-63 Old Dominion University 4347**  
Development of computer models for the prediction of large distorted reflector antenna characteristics  
*Period Obligations*  
05/16/80-12/31/81 FY81 \$19,865 TOTAL \$54,846  
*Prin Invest NASA Tech Officer CASE Category*  
Moskowitz, S M LARC/Bailey, M C 45-Elec Engr

**NAG 1-66 Old Dominion University 4348**  
Energy environment study  
*Period Obligations*  
05/16/80-03/15/81 FY81 TOTAL \$22,294  
*Prin Invest NASA Tech Officer CASE Category*  
Strangways, R S LARC/Batten, B G 72-Economics  
Qureshi, U A

**NAG 1-96 Old Dominion University 4349**  
Boundary layer receptivity  
*Period Obligations*  
08/01/80-09/30/81 FY81 TOTAL \$49,585  
*Prin Invest NASA Tech Officer CASE Category*  
Grosch, C E LARC/Bushnell, D M 41-Aero Engr  
LARC/Hefner, J N

**NAG 1-102 Old Dominion University 4350**  
Control of precision-pointed structures mounted on flexible space platforms  
*Period Obligations*  
02/15/81-02/14/82 FY81 TOTAL \$54,989  
*Prin Invest NASA Tech Officer CASE Category*  
Goglia, G L LARC/Hamer, H A 49-Engr, NEC  
Joshi, S M

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAG 1-111**                      **Old Dominion University**                      **4351**  
Investigation of a pattern classification approach for wind  
streamline direction ambiguity removal  
*Period*                                      *Obligations*  
11/13/80-01/15/82                      FY81 \$35,250                      TOTAL \$35,250  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Stoughton, J W                      LARC/Schroeder, L C                      LARC/Jones, W L                      33-Oceanography

**NAG 1-191**                      **Old Dominion University**                      **4358**  
Feasibility study of deformation modes and transient impact  
distribution of deforming composite materials using viscoplasticity  
method  
*Period*                                      *Obligations*  
05/16/81-08/15/81                      FY81 \$8,815                      TOTAL \$8,815  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dwivedi, S N                      LARC/Illg, W                      LARC/Kennedy, J M                      47-Materials Engr

**NAG 1-120**                      **Old Dominion University**                      **4352**  
Analysis of aerothermo-dynamic environment of an aerocapture  
vehicle  
*Period*                                      *Obligations*  
11/04/80-11/03/81                      FY81 \$23,534                      TOTAL \$23,534  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Tiwari, S N                      LARC/Moss, J N                      41-Aero Engr

**NAG 1-196**                      **Old Dominion University**                      **4359**  
Low-velocity impact behavior of composites  
*Period*                                      *Obligations*  
09/15/81-09/14/82                      FY81 \$47,692                      TOTAL \$47,692  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Gogha, G L                      LARC/Illg, W                      LARC/Davidson, J R                      47-Materials Engr

**NAG 1-121**                      **Old Dominion University**                      **4353**  
Study of vorticular structure in turbulent boundary layers  
*Period*                                      *Obligations*  
11/04/80-11/30/82                      FY81 \$65,911                      TOTAL \$65,911  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Ash, R L                      LARC/Anyiwo, J C                      LARC/Bushnell, D M                      41-Aero Engr

**NAG 1-197**                      **Old Dominion University**                      **4360**  
Burgers approximation for two-dimensional flow past an ellipse  
*Period*                                      *Obligations*  
05/26/81-05/25/82                      FY81 \$23,328                      TOTAL \$23,328  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dorrepaal, J M                      LARC/Wornom, S F                      LARC/South, J C, Jr                      21-Mathematics

**NAG 1-142**                      **Old Dominion University**                      **4354**  
Propagation of sound through the Earth's atmosphere  
*Period*                                      *Obligations*  
01/01/81-12/31/81                      FY81 \$41,022                      TOTAL \$41,022  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Becher, J E                      LARC/Holmes, H K                      13-Physics  
Merideth, R

**NAS 1-15648**                      **Old Dominion University**                      **4361**  
Research in aerodynamics and related fields  
*Period*                                      *Obligations*  
12/13/78-12/12/81                      FY81 \$145,325                      TOTAL \$524,697  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Unavailable                      LARC/Erickson, W D                      LARC/Duberg, J E                      41-Aero Engr

**NAG 1-148**                      **Old Dominion University**                      **4355**  
Modeling of thin-film gallium arsenide (GaAs) growth  
*Period*                                      *Obligations*  
02/01/81-09/15/81                      FY81 \$19,719                      TOTAL \$19,719  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Heinbockel, J H                      LARC/Outlaw, R A                      47-Materials Engr

**NAS 1-15930**                      **Old Dominion University**                      **4362**  
Scramjet inlet analysis  
*Period*                                      *Obligations*  
11/01/79-01/15/82                      FY81                      TOTAL \$93,797  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Tiwari, S N                      LARC/Drummond, J P                      LARC/Beach, H L                      41-Aero Engr

**NAG 1-175**                      **Old Dominion University**                      **4356**  
Higher modes of Orr-Sommerfeld problem for the stability of  
boundary-layer flows  
*Period*                                      *Obligations*  
09/01/81-08/31/82                      FY81 \$32,923                      TOTAL \$32,923  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lakin, W D                      LARC/Dagenhart, J R                      LARC/Newman, P A                      21-Mathematics

**NAS 1-16537**                      **Old Dominion University**                      **4363**  
Editorial analysis and review services  
*Period*                                      *Obligations*  
02/16/81-11/15/85                      FY81 \$27,813                      TOTAL \$27,813  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Stohrer, F F                      LARC/Huffman, J P                      99-Multi-Discip

**NAG 1-189**                      **Old Dominion University**                      **4357**  
Relationship among sea surface roughness variations, oceano-  
graphic analyses and airborne remote sensing analyses  
*Period*                                      *Obligations*  
05/16/81-10/31/81                      FY81 \$19,738                      TOTAL \$19,738  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Oertel, G F                      LARC/Croswell, W F                      LARC/Johnson, J W                      33-Oceanography

**NAS 9-16431**                      **Old Dominion University**                      **4364**  
Study for proportion estimation sensitivity analysis  
*Period*                                      *Obligations*  
07/16/81-07/15/82                      FY81 \$35,000                      TOTAL \$35,000  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Chhikara, R S                      JSC/Browne, T D                      39-Env Sci, NEC

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NCC 1-2** **Old Dominion University** **4365**  
Measurements of the global distribution of carbon monoxide in the troposphere  
*Period* *Obligations*  
04/01/79-12/31/81 **FY81** **TOTAL \$171,184**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kindle, E C LARC/Reichle, H G, Jr 31-Atmos Sci  
Condon, E P LARC/Beck, S M

**NCC 1-9** **Old Dominion University** **4366**  
Wind tunnel studies of advanced cargo aircraft concepts  
*Period* *Obligations*  
06/22/79-06/21/80 **FY81** **TOTAL \$60,538**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Goglia, G L LARC/Peterson, J B 41-Aero Engr  
Rao, D M

**NCC 1-26** **Old Dominion University** **4367**  
Application of photo-orthotropic elasticity to plane problems in composites  
*Period* *Obligations*  
11/01/79-08/31/82 **FY81** **TOTAL \$30,622**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Prabhakaran, R LARC/Cooper, P A 42-Astro Engr

**NCC 1-28** **Old Dominion University** **4368**  
Application of advanced lidar techniques for atmospheric remote sensing  
*Period* *Obligations*  
12/15/79-12/31/81 **FY81 \$56,756** **TOTAL \$149,519**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kindle, E C LARC/Browell, E V 31-Atmos Sci  
LARC/Carter, A F

**NCC 1-30** **Old Dominion University** **4369**  
Coupled radiative-chemical studies of the Earth's troposphere  
*Period* *Obligations*  
12/01/79-11/30/81 **FY81 \$28,664** **TOTAL \$46,606**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Tiwari, S N LARC/Levine, J S 31-Atmos Sci

**NCC 1-32** **Old Dominion University** **4370**  
Multicolor lidar system research  
*Period* *Obligations*  
12/15/79-12/14/81 **FY81 \$73,845** **TOTAL \$146,860**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Copeland, G E LARC/Browell, E V 13-Physics  
LARC/Carter, A F

**NCC 1-34** **Old Dominion University** **4371**  
Development of data processing  
*Period* *Obligations*  
01/22/80-11/30/81 **FY81 \$99,403** **TOTAL \$263,566**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Kinole, E C LARC/Reichle, H G 39-Env Sci, NEC  
Casas, J C LARC/Wallio, H A

**NCC 1-42** **Old Dominion University** **4372**  
A study of physical processes for space-radiation protection  
*Period* *Obligations*  
06/04/80-06/18/82 **FY81 \$30,000** **TOTAL \$68,163**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Khandelwal, G S LARC/Wilson, J W 19-Phys Sci, NEC

**NGR 47-003-052** **Old Dominion University** **4373**  
Graduate research program in aeronautics and air transportation  
*Period* *Obligations*  
05/12/71-08/31/83 **FY81 \$50,000** **TOTAL \$733,922**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Roberts, A S LARC/Hohl, F 41-Aero Engr  
LARC/Foughner, J T

**NGT 47-003-029** **Old Dominion University** **4374**  
Summer faculty fellowship program in research  
*Period* *Obligations*  
11/14/69-03/31/82 **FY81 \$195,363** **TOTAL \$1,350,019**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Goglia, G L HQ-LC/Carter, C H 49-Engr, NEC

**NGT 47-003-800** **Old Dominion University** **4375**  
Graduate student researchers program  
*Period* *Obligations*  
07/01/81-06/30/82 **FY81 \$11,000** **TOTAL \$11,000**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Coates, G D HQ-LC/Carter, C H 69-Psych, NEC

**NSG 1167** **Old Dominion University** **4376**  
The structural behavior of advanced composite materials  
*Period* *Obligations*  
06/01/75-05/31/82 **FY81** **TOTAL \$135,490**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Thornton, E A LARC/Dixon, S C 41-Aero Engr  
Fallon, D J

**NSG 1177** **Old Dominion University** **4377**  
Experimental and analytical studies in fluidics  
*Period* *Obligations*  
05/01/75-02/28/83 **FY81 \$16,220** **TOTAL \$122,953**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Goglia, G L LARC/Hellbaum, R F 45-Elec Engr  
LARC/Garner, H D

**NSG 1271** **Old Dominion University** **4378**  
Space Shuttle experiments studies  
*Period* *Obligations*  
03/01/76-02/28/82 **FY81 \$198,293** **TOTAL \$916,823**  
*Prin Invest* *NASA Tech Officer* *CASE Category*  
Brock, F J LARC/Melfi, L T, Jr 13-Physics  
Hueser, J E LERC/Jones, J J

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NSG 1321**                      **Old Dominion University**                      **4379**  
Concepts for structurally compatible thermal finite elements  
*Period*                                      *Obligations*  
09/01/76-12/31/81                      FY81 \$62,507                      TOTAL \$186,528  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Thornton, E A                      LARC/Wieting, A R                      49-Engr, NEC

**NSG 1357**                      **Old Dominion University**                      **4380**  
Implementation of advanced Trefftz plane drag optimization technique in vortex lattice wing design program  
*Period*                                      *Obligations*  
11/08/76-11/30/81                      FY81                      TOTAL \$94,585  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Kuhlman, J M                      LARC/Peterson, J B , Jr                      41-Aero Engr

**NSG 1393**                      **Old Dominion University**                      **4381**  
Computational solution of atmospheric chemistry problems  
*Period*                                      *Obligations*  
06/01/77-05/15/82                      FY81                      TOTAL \$144,044  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Ake, R L                      LARC/Phillips, D H                      12-Chemistry  
Jafri, J A                      LARC/Rogowski, R S

**NSG 1464**                      **Old Dominion University**                      **4382**  
Effects of angle-of-attack on the coupled radiative and convective heat transfer about blunt planetary entry bodies  
*Period*                                      *Obligations*  
11/01/77-02/29/80                      FY81                      TOTAL \$77,364  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Tiwari, S N                      LARC/Graves, R A , Jr                      41-Aero Engr  
Kumar, A

**NSG 1480**                      **Old Dominion University**                      **4383**  
Comparative study of flare control laws  
*Period*                                      *Obligations*  
12/15/77-12/31/81                      FY81                      TOTAL \$110,921  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Tcheng, P                      LARC/Creedon, J F                      41-Aero Engr  
Nadkarni, A A                      LARC/Ostroff, A J

**NSG 1491**                      **Old Dominion University**                      **4384**  
Hot wire laser Doppler velocimeter and mean measurements on flow phenomena induced by suction through perforated surfaces  
*Period*                                      *Obligations*  
02/01/78-01/31/80                      FY81                      TOTAL \$60,857  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Goghia, G L                      LARC/Bushnell, D M                      41-Aero Engr  
Wilkerson, S                      LARC/Hefner, J N

**NSG 1517**                      **Old Dominion University**                      **4385**  
A numerical investigation of viscous slot flow  
*Period*                                      *Obligations*  
04/15/78-11/30/81                      FY81 \$28,325                      TOTAL \$85,678  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Cooke, C H                      LARC/Dwoyer, D L                      41-Aero Engr  
LARC/South, J C

**NSG 1560**                      **Old Dominion University**                      **4386**  
Development of a nonlinear vortex method  
*Period*                                      *Obligations*  
09/01/78-09/30/81                      FY81 \$32,997                      TOTAL \$91,227  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Kandil, O A                      LARC/Yates, E C , Jr                      41-Aero Engr  
LARC/Young, W H

**NSG 1561**                      **Old Dominion University**                      **4387**  
Investigation of aerodynamic characteristics of wings having vortex flow using different numerical codes  
*Period*                                      *Obligations*  
09/01/78-12/31/81                      FY81                      TOTAL \$93,079  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Goghia, G L                      LARC/Lamar, J E                      41-Aero Engr  
Reddy, C S

**NSG 1563**                      **Old Dominion University**                      **4388**  
Scale models for the improvement of flow patterns of a low speed tunnel  
*Period*                                      *Obligations*  
09/15/78-08/31/81                      FY81 \$6,298                      TOTAL \$86,130  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Barna, P S                      LARC/Margason, R J                      41-Aero Engr  
LARC/Sellers, W L

**NSG 1568**                      **Old Dominion University**                      **4389**  
Theoretical study of solar pumped lasers  
*Period*                                      *Obligations*  
12/15/78-10/31/81                      FY81 \$34,021                      TOTAL \$80,080  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Harries, W L                      LARC/Wilson, J W                      13-Physics  
LARC/Meador, W E

**NSG 1649**                      **Old Dominion University**                      **4390**  
Dynamic identification for control of large space structures  
*Period*                                      *Obligations*  
10/01/79-10/31/81                      FY81 \$33,372                      TOTAL \$70,179  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Ibrahim, S R                      LARC/Pappa, R S                      46-Mech Engr  
LARC/Hanks, B R

**NSG 1650**                      **Old Dominion University**                      **4391**  
Design of multi-variable feedback control systems via spectral assignment  
*Period*                                      *Obligations*  
09/01/79-12/31/81                      FY81 \$16,373                      TOTAL \$104,921  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Mielke, R R                      LARC/Price, D B                      41-Aero Engr  
Tung, L J                      LARC/Oehman, W I

**NSG 1655**                      **Old Dominion University**                      **4392**  
Airborne antenna pattern calculations  
*Period*                                      *Obligations*  
11/01/79-10/31/81                      FY81                      TOTAL \$41,574  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Mielke, R R                      LARC/Gilreath, M C                      45-Elec Engr

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**VIRGINIA (Continued)**

**NSG 5053**                      **Old Dominion University**                      **4393**  
Radiation investigations of optical and electronic components used  
in astronomical satellite studies  
*Period*    *Obligations*  
02/17/75-07/31/80                      FY81                      TOTAL \$177,747  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Becher, J                      GSFC/Fowler, W                      19-Phys Sci, NEC  
Kernell, R L

**NSG 5289**                      **Old Dominion University**                      **4394**  
Radiation effects studies for the high resolution spectrograph  
*Period*    *Obligations*  
07/10/78-05/09/82                      FY81 \$20,000                      TOTAL \$176,796  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Becher, J                      GSFC/Fowler, W B                      13-Physics  
Kernell, R L

**NAG 1-43**                      **University of Virginia**                      **4395**  
The development of the minicomputer/global bus interface for  
the finite element machine  
*Period*    *Obligations*  
03/01/80-12/31/81                      FY81 \$20,187                      TOTAL \$33,345  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Aylor, J H                      LARC/Loendorf, D D                      45-Elec Engr

**NAG 1-46**                      **University of Virginia**                      **4396**  
Numerical algorithms for finite element computations on arrays  
of microprocessors  
*Period*    *Obligations*  
03/01/80-02/28/82                      FY81 \$24,201                      TOTAL \$44,756  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Ortega, J M                      LARC/Loendorf, D D                      49-Engr, NEC

**NAG 1-137**                      **University of Virginia**                      **4397**  
Large space structure damping design  
*Period*    *Obligations*  
01/16/81-01/15/82                      FY81 \$63,957                      TOTAL \$63,957  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Pilkey, W D                      LARC/Horner, G C                      42-Astro Engr  
LARC/Montgomery, R C

**NAG 1-177**                      **University of Virginia**                      **4398**  
Investigations of semi-conductor clad optical waveguides  
*Period*    *Obligations*  
05/01/81-05/01/82                      FY81 \$47,003                      TOTAL \$47,003  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Batchman, T E                      LARC/Segura, R                      45-Elec Engr

**NAG 3-141**                      **University of Virginia**                      **4399**  
Modulation and coding in the small bt regime  
*Period*    *Obligations*  
03/01/81-01/01/83                      FY81 \$99,217                      TOTAL \$99,217  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wilson, S G                      LERC/Miller, E F                      45-Elec Engr  
LERC/Whyte, W A

**NAG 3-180**                      **University of Virginia**                      **4400**  
Aerodynamic cross-coupling forces on centrifugal tur-  
bomachinery  
*Period*    *Obligations*  
04/25/81-04/24/82                      FY81 \$56,690                      TOTAL \$56,690  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Allaire, P E                      LERC/Kascak, A F                      46-Mech Engr  
Sexton, M R                      LERC/Fleming, D P  
Barrett, L E

**NAG 5-61**                      **University of Virginia**                      **4401**  
Star formation in blue compact dwarf galaxies  
*Period*    *Obligations*  
06/01/80-05/31/81                      FY81                      TOTAL \$4,170  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Thuan, T X                      GSFC/Boggess, A                      11-Astronomy

**NAG 5-102**                      **University of Virginia**                      **4402**  
Kinematic analysis of tropical cyclones using satellite wind  
measurements  
*Period*    *Obligations*  
09/01/80-01/31/82                      FY81 \$27,000                      TOTAL \$31,833  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Frank, W M                      GSFC/Rodgers, E B                      31-Atmos Sci

**NAG 8-308**                      **University of Virginia**                      **4403**  
X-ray observations of southern high-redshift clusters  
*Period*    *Obligations*  
02/18/80-02/18/82                      FY81                      TOTAL \$3,398  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Sarazin, C L                      MSFC/White, R                      11-Astronomy

**NAG 8-375**                      **University of Virginia**                      **4404**  
Observe time in guest investigative program for X-ray observations  
of 2 remarkable group of quasars and X-ray observations of  
selected area 57 and X-ray observations of blue compact dwarf  
galaxies  
*Period*    *Obligations*  
09/21/80-12/31/82                      FY81                      TOTAL \$9,447  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Thuan, T X                      MSFC/Stone, J F                      11-Astronomy

**NAGW 186**                      **University of Virginia**                      **4405**  
Sputtering effects on the Jovian satellites and rings  
*Period*    *Obligations*  
04/15/81-04/14/82                      FY81 \$25,516                      TOTAL \$25,516  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Johnson, R E                      HQ-SL/Quade, W L                      32-Geological Sci  
HQ-SL/Mitz, M

**NAS 1-14908**                      **University of Virginia**                      **4406**  
Air transportation systems research  
*Period*    *Obligations*  
05/02/77-05/02/80                      FY81                      TOTAL \$211,690  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Kuhlthau, A R                      LARC/Conner, D W                      49-Engr, NEC  
LARC/Brissenden, R F

## NASA'S UNIVERSITY PROGRAM

### VIRGINIA (Continued)

NAS 1-16286		University of Virginia	4407
Air transportation systems research			
<i>Period</i>		<i>Obligations</i>	
11/13/80-11/12/83	FY81	\$40,000	TOTAL \$40,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Kugitman, A R	LARC/Taylor, R T		41-Aero Engr
Jacobson, I	LARC/Driver, C		

NAS 1-16550	University of Virginia	4408
Interplanetary dust experiment		
<i>Period</i>	<i>Obligations</i>	
01/07/81-01/06/86	FY81 \$138,057	TOTAL \$138,057
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Singer, S F	LARC/Jones, J L	31-Atmos Sci
Stanley, J E		

NAS 5-22346		University of Virginia	4409
Design and application of a one meter UV-optical telescope for Spacelab astronomy missions			
<i>Period</i>		<i>Obligations</i>	
04/29/75-06/30/81	FY81	TOTAL	\$37,468
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
O'connell, R W	GSFC/Johnson, G	11-Astronomy	

NAS 5-24218	University of Virginia	4410
Research study on mixer diodes for submillimeter applications		
<i>Period</i>	<i>Obligations</i>	
06/23/77-02/28/82	FY81 \$36,359	TOTAL \$137,268
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mattauch, R J	GSFC/Lamb, G M	49-Engr, NEC
	GSFC/Buhl, D	

<b>NAS 5-25634</b>	<b>University of Virginia</b>	<b>4411</b>
<b>Study of the trellis phase codes for improved power/bandwidth efficiency in satellite communications</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/11/79-04/10/81</b>	<b>FY81</b>	<b>TOTAL \$84,511</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Wilson, S G</b>	<b>GSFC/Kahle, D R</b>	<b>45-Elec Engr</b>

NAS 5-26011		University of Virginia	4412
Investigation for search and rescue Doppler processor development			
Period	Obligations		
01/29/80-12/15/80	FY81	TOTAL \$18,000	
Prin Invest	NASA Tech Officer	CASE Category	
Wilson, S G	GSFC/Kahle, D R	45-Elec Engr	

NAS 5-26110	University of Virginia	4413
Spacelab/ultraviolet investigations	imaging telescope astronomical in-	
<i>Period</i>	<i>Obligations</i>	
03/25/80-03/24/82	FY81	TOTAL \$13,012
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
O'Connell, R W	GSFC/Stecker, T P	11-Astronomy

NAS 5-26466		University of Virginia		4414
Development of superconducting tunnel junctions for millimeter-wave receivers				
Period		Obligations		
03/20/81-12/19/82	FY81	\$72,314	TOTAL	\$72,314
Prin Invest	NASA Tech Officer		CASE Category	
Mattauch, R J	GSFC/Jones, R L		45-Elec Engr	

NAS 5-26476		University of Virginia	4415
Starlab facility definition team (FDT) continuing study of schematic design and scientific applications			
<i>Period</i>		<i>Obligations</i>	
01/19/81-01/19/83	FY81	\$47,972	TOTAL \$47,972
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
O'Connell, R W	GSFC/Cyphers, H D		11-Astronomy

NAS 8-31951	University of Virginia	4416
Space Shuttle main engine whirl problem		
<i>Period</i>	<i>Obligations</i>	
04/19/76-12/17/80	FY81	TOTAL \$351,245
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Gunter, E J	MSFC/Clark, W D	46-Mech Engr
	MSFC/Goetz, O K	

NAS 8-33327	University of Virginia	4417
X-ray observations of selected areas		
<i>Period</i>	<i>Obligations</i>	
03/26/79-12/31/82	FY81	TOTAL \$4,915
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Thuan, T X	MSFC/Jones, J B , Jr	11-Astronomy
Owen, F M		

NAS 8-33348	University of Virginia	4418
X-ray observations of M51 and M58 the dynamics of spiral galaxies		
<i>Period</i>	<i>Obligations</i>	
04/16/79-07/15/81	FY81	TOTAL \$2,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sarazin, C L	MSFC/Jones, J B, Jr	11-Astronomy
Roberts, W W, Jr		

NSG 1335	University of Virginia	4419
Investigation of numerical methods for use in real-time simulation		
<i>Period</i>		<i>Obligations</i>
10/01/76-12/31/79	FY81	TOTAL \$58,085
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brown, R L, Jr	LARC/Bowles, R L	21-Mathematics

NSG 1509	University of Virginia	4420
Evaluating and minimizing noise impact due to aircraft flyover		
<i>Period</i>	<i>Obligations</i>	
04/01/78-08/31/81	FY81	TOTAL \$142,186
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cook, G	LARC/Deloach, R	69-Psych, NEC
Jacobson, I D		



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**VIRGINIA (Continued)**

**NSG 1567**                      **University of Virginia**                      **4421**  
Investigation of direct integrated optics modulators  
*Period*                                      *Obligations*  
11/01/78-06/30/81                      **FY81**                      **TOTAL \$77,936**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Batchman, T E                      LARC/Beatty, M E                      13-Physics

**NSG 1599**                      **University of Virginia**                      **4422**  
Polymorphic reconfigurable emulator for parallel simulation  
*Period*                                      *Obligations*  
03/01/79-03/31/80                      **FY81**                      **TOTAL \$68,176**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Parrish, E A                      LARC/Ashworth, B R                      45-Elec Engr  
McVey, E S                      LARC/Bowles, R L  
Cook, G

**NSG 1652**                      **University of Virginia**                      **4423**  
The terrestrial growth of lead-tin-telluride by techniques related to low-gravity growth  
*Period*                                      *Obligations*  
09/01/79-08/31/82                      **FY81 \$26,776**                      **TOTAL \$78,032**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Jesser, W A                      LARC/Fripp, A L                      47-Materials Engr  
LARC/Crouch, R K

**NSG 2225**                      **University of Virginia**                      **4424**  
Mammalian body size, composition and growth as influenced by hypokinesia  
*Period*                                      *Obligations*  
04/01/77-11/30/81                      **FY81**                      **TOTAL \$101,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Pitts, G C                      ARC/Holton, E M                      51-Biological Sci

**NSG 3177**                      **University of Virginia**                      **4425**  
A research proposal for the investigation of rotor transient analysis by the modal method  
*Period*                                      *Obligations*  
02/15/80-02/14/81                      **FY81**                      **TOTAL \$108,023**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Barrett, L E                      LERC/Kascak, A F                      46-Mech Engr  
Gunter, E J                      LERC/Fleming, D P  
Allaire, P E

**NSG 3242**                      **University of Virginia**                      **4426**  
Investigation of the formation of diffusion barrier materials on silicon carbide filaments and their incorporation into metal matrix composites  
*Period*                                      *Obligations*  
01/03/79-04/01/82                      **FY81 \$40,293**                      **TOTAL \$119,499**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wawner, F E, Jr                      LERC/Behrendt, D R                      47-Materials Engr

**NSG 7364**                      **University of Virginia**                      **4427**  
Observations of the satellites of the outer planets  
*Period*                                      *Obligations*  
07/01/78-11/30/81                      **FY81**                      **TOTAL \$80,853**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Ianna, P A                      HQ-SL/Brunk, W E                      11-Astronomy

**NSG 7572**                      **University of Virginia**                      **4428**  
Study of layered deposits and paleoclimates on Mars  
*Period*                                      *Obligations*  
04/01/79-10/31/81                      **FY81 \$25,230**                      **TOTAL \$74,808**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Howard, A                      HQ-SL/Boyce, J M                      32-Geological Sci  
HQ-SL/Holt, H E

**NAG 9-14**                      **Virginia Commonwealth University**                      **4429**  
Autonomic mechanisms in man  
*Period*                                      *Obligations*  
01/19/81-01/18/82                      **FY81 \$43,000**                      **TOTAL \$43,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Eckberg, D L                      JSC/Warner, J L                      56-Medical Sciences

**NAS 1-16453**                      **Virginia Commonwealth University**                      **4430**  
Development of acoustic test apparatus for evaluation of the state of the human airways  
*Period*                                      *Obligations*  
10/07/80-06/06/81                      **FY81 \$33,325**                      **TOTAL \$33,325**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Patterson, J L                      LARC/Hardin, J C                      56-Medical Sciences  
LARC/Long, S A

**NAS 9-16046**                      **Virginia Commonwealth University**                      **4431**  
Influence of weightlessness upon automatic cardiovascular control  
*Period*                                      *Obligations*  
01/17/80-01/31/82                      **FY81 \$10,100**                      **TOTAL \$42,491**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Exkberg, D L                      JSC/Peck, E E                      59-Life Sci, NEC

**NAGW 213**                      **Virginia Military Institute**                      **4432**  
Synthetic sulfurous magmas                      Understanding sulfur systematic on Io  
*Period*                                      *Obligations*  
05/01/81-05/31/82                      **FY81 \$10,800**                      **TOTAL \$10,800**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Schreiber, H D                      HQ-SL/Quaide, W L                      32-Geological Sci  
HQ-SL/French, B M

**NSG 7355**                      **Virginia Military Institute**                      **4433**  
Oxidation-reduction processes in synthetic silicate melts  
*Period*                                      *Obligations*  
06/01/77-12/31/81                      **FY81 \$14,050**                      **TOTAL \$91,382**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Schrieber, H D                      HQ-SL/Quaide, W L                      32-Geological Sci  
HQ-SL/French, B M

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**VIRGINIA (Continued)**

**DEN 3-65**                      **Va Polytechnic Inst & St Univ**                      **4434**  
Electronically computed D C motor for electric passenger vehicles

<i>Period</i>	<i>Obligations</i>	
09/13/78-08/13/81	FY81 \$96,815	TOTAL \$402,847
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Demerdash, N A	LERC/Maslowski, E A	45-Elec Engr
Lee, F C		

**NAG 1-7**                      **Va Polytechnic Inst & St Univ**                      **4435**  
The reduced order model problem in distributed parameter systems adaptive identification and control

<i>Period</i>	<i>Obligations</i>	
11/01/79-10/31/81	FY81 \$39,187	TOTAL \$69,159
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, C R	LARC/Montgomery, R C	42-Astro Engr

**NAG 1-53**                      **Va Polytechnic Inst & St Univ**                      **4436**  
Space Shuttle windward side viscous flowfield predictions

<i>Period</i>	<i>Obligations</i>	
04/01/80-09/30/81	FY81 \$40,235	TOTAL \$79,953
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lewis, C H	LARC/Zoby, E V	41-Aero Engr
Szema, K Y	LARC/Hamilton, H H	

**NAG 1-68**                      **Va Polytechnic Inst & St Univ**                      **4437**  
Optical fiber interferometer for the study of ultrasonic waves in composite materials

<i>Period</i>	<i>Obligations</i>	
10/01/80-09/30/81	FY81	TOTAL \$30,536
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Claus, R O	LARC/Cantrell, J H, Jr	13-Physics
	LARC/Heyman, J S	

**NAG 1-78**                      **Va Polytechnic Inst & St Univ**                      **4438**  
Nonequilibrium material effects on behavior of polymeric composite matrices and their related composites

<i>Period</i>	<i>Obligations</i>	
07/01/80-09/30/81	FY81	TOTAL \$51,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wilkes, G L	LARC/Johnston, N J	47-Materials Engr
	LARC/Sykes, G F	

**NAG 1-80**                      **Va Polytechnic Inst & St Univ**                      **4439**  
Computational methods of robust controller design for aerodynamic flutter

<i>Period</i>	<i>Obligations</i>	
06/15/80-11/14/81	FY81 \$34,942	TOTAL \$45,334
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Anderson, L R	LARC/Newsom, J R	41-Aero Engr
	LARC/Sobieski, J	

**NAG 1-89**                      **Va Polytechnic Inst & St Univ**                      **4440**  
Chemical modification of semiconductor surfaces

<i>Period</i>	<i>Obligations</i>	
09/01/80-11/30/81	FY81	TOTAL \$19,806
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Finklea, H O	LARC/Byvik, C E	19-Phys Sci, NEC
	LARC/Conway, E J	

**NAG 1-101**                      **Va Polytechnic Inst & St Univ**                      **4441**  
Shuttle nozzle flowfield

<i>Period</i>	<i>Obligations</i>	
08/12/80-08/31/81	FY81	TOTAL \$25,204
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lewis, C H	LARC/Melfi, L T	41-Aero Engr

**NAG 1-106**                      **Va Polytechnic Inst & St Univ**                      **4442**  
Poly (aryl ethers) Effect of polymer structure on radiation resistance

<i>Period</i>	<i>Obligations</i>	
11/01/80-10/31/81	FY81 \$36,808	TOTAL \$36,808
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
McGrath, J E	LARC/Sykes, G F	47-Materials Engr

**NAG 1-119**                      **Va Polytechnic Inst & St Univ**                      **4443**  
Influence of small surface roughness on turbulent flow over solid and porous surface

<i>Period</i>	<i>Obligations</i>	
11/04/80-11/03/81	FY81 \$41,213	TOTAL \$41,213
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schetz, J A	LARC/Hefner, J N	41-Aero Engr
	LARC/Bushnell, D M	

**NAG 1-123**                      **Va Polytechnic Inst & St Univ**                      **4444**  
Modeling of temperature and suspended sediment in the John H Kerr Reservoir, Virginia/North Carolina

<i>Period</i>	<i>Obligations</i>	
12/01/80-08/31/82	FY81 \$70,334	TOTAL \$70,334
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kuo, C Y	LARC/Whitlock, C H	44-Civil Engr
	LARC/Curfman, H J	

**NAG 1-127**                      **Va Polytechnic Inst & St Univ**                      **4445**  
Investigation of adhesive/adherend and fiber matrix interactions

<i>Period</i>	<i>Obligations</i>	
02/01/81-01/31/82	FY81 \$31,078	TOTAL \$31,078
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wightman, J P	LARC/Progar, D J	12-Chemistry
	LARC/Nelson, J	

**NAG 1-128**                      **Va Polytechnic Inst & St Univ**                      **4446**  
International union of theoretical and applied mechanics symposium on mechanics of composite

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/82	FY81 \$15,000	TOTAL \$15,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Herakovich, C T	LARC/Davis, J G, Jr	49-Engr, NEC
	LARC/Tenney, D R	

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NAG 1-132		Va Polytechnic Inst & St Univ		4447	
Lightning upset methodology research					
<i>Period</i>		<i>Obligations</i>			
12/15/80-12/14/81		FY81	\$35,627	TOTAL	\$35,627
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Tront, J G		LARC/Pitts, F L		45-Elec Engr	

NAG 1-188		Va Polytechnic Inst & St Univ		4454
Remote sensing of water quality				
Period		Obligations		
05/01/81-04/30/82		FY81 \$18,310	TOTAL \$18,310	
Prin Invest		NASA Tech Officer	CASE Category	
Giles, H, Jr		LARC/Hypes, W D	39-Env Sci, NEC	
Koeln, G T		LARC/Whitlock, C H		

<b>NAG 1-139</b>		<b>Va Polytechnic Inst &amp; St Univ</b>		<b>4448</b>	
<b>Quasi-Newton methods for nonlinear structural analysis and synthesis</b>					
<i>Period</i>		<i>Obligations</i>			
01/01/81-12/31/81		FY81	\$42,066	TOTAL	\$42,066
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Kamat, M P		LARC/Hayduk, R J		49-Engr, NEC	
		LARC/Thomson, R G			

<b>NAG I-192</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4455</b>
<b>Acousto-optical techniques in ultrasonic transducer calibration for materials inspection</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/01/81-09/30/82</b>	<b>FY81 \$36,205</b>	<b>TOTAL \$36,205</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Claus, R O</b>	<b>LARC/Cantrell, J H</b>	<b>13-Physics</b>
	<b>LARC/Heyman, J S</b>	

<b>NAG 1-145</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4449</b>
<b>Development and application of optimum sensitivity analysis of structures</b>		
<i>Period</i>	<i>Obligations</i>	
01/08/81-10/07/81	FY81 \$23,548	TOTAL \$23,548
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hallauer, W L	LARC/Sobieski, J E	41-Aero Engr
	LARC/Walsh, J L	

<b>NAG 1-193</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4456</b>
<b>Measurement of displacement around holes in composite plates subjected to quasi-static compression</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$35,920	TOTAL \$35,920
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Duke, J C	LARC/Starnes, J H	41-Aero Engr
Post. D		

NAG 1-146		Va Polytechnic Inst & St Univ	4450
Unsteady boundary layer injection			
<i>Period</i>		<i>Obligations</i>	
01/08/81-06/30/81	FY81	\$5,723	TOTAL \$5,723
<i>Prm Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Telonis, D P	LARC/Bushnell, D M		41-Aero Engr
	LARC/Hefner, J W		

<b>NAG 1-201</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4457</b>
<b>Compression strength failure mechanisms in undirectional composite laminates containing a hole</b>		
<i>Period</i>	<i>Obligations</i>	
06/15/81-08/31/82	FY81 \$26,271	TOTAL \$26,271
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, E R	LARC/Starnes, J H	41-Aero Engr

NAG 1-156		— Va Polytechnic Inst & St Univ		4451
Measurement of unsteady pressures on compressor blades				
<i>Period</i>		<i>Obligations</i>		
03/24/81-09/30/82	FY81	\$38,611	TOTAL	\$38,611
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Wu, S T	LARC/Chestnutt, D		46-Mech Engr	

NAG 1-203		Va Polytechnic Inst & St Univ		4458
Research on intercept on-board calculations				
<i>Period</i>		<i>Obligations</i>		
07/01/81-06/30/82		FY81	\$49,968	TOTAL \$49,968
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Kelley, H J		LARC/Price, D B		41-Aero Engr
Cliff, E M		LARC/Gracey, C		

NAG I-168	Va Polytechnic Inst & St Univ		4452
Structural optimization for improved damage tolerance			
<i>Period</i>	<i>Obligations</i>		
09/01/81-10/15/82	FY81 \$4,978	TOTAL \$4,978	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Hafika, R T	LARC/Starnes, J H	41-Aero Engr	

NAG 2-17		Va Polytechnic Inst & St Univ		4459	
Comparative evaluation of workload estimation techniques in piloting tasks					
Period		Obligations			
01/15/80-01/14/82		FY81 \$104,384		TOTAL \$178,911	
Prin Invest		NASA Tech Officer		CASE Category	
Wierwille, W W		ARC/Wempe, T E		99-Multi-Discip	

<b>NAG 1-174</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4453</b>
<b>Chip level simulation of fault tolerant computers</b>		
<i>Period</i>	<i>Obligations</i>	
<b>06/01/81-05/31/82</b>	<b>FY81 \$83,915</b>	<b>TOTAL \$83,915</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Armstrong, J R</b>	<b>LARC/Migneault, G E</b>	
<b>Gray, F G</b>	<b>29-Math Computer Sci. NEC</b>	

NAG 3-78		Va Polytechnic Inst & St Univ		4460	
Environmental degradation of engineering materials II					
<i>Period</i>		<i>Obligations</i>			
01/01/81-12/31/81		FY81		TOTAL \$3,385	
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Louthan, M R , Jr		LERC/Stephens, J R		47-Materials Engr	
McNitt, R P					
Sisson, R D , Jr					

### NASA'S UNIVERSITY PROGRAM

#### VIRGINIA (Continued)

NAG 3-81		Va Polytechnic Inst & St Univ	4461
Input filter compensation for switching regulators			
<i>Period</i>		<i>Obligations</i>	
10/01/80-06/29/82	FY81	TOTAL	\$35,090
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Lee, F C	LERC/Kolecki, J C	45-Elec Engr	

NAG 3-99		Va Polytechnic Inst & St Univ		4462
High power transistor evaluations for electric vehicle applications				
Period		Obligations		
09/15/80-09/14/82	FY81	TOTAL	\$174,822	
Prin Invest	NASA Tech Officer	CASE Category		
Lee, F C	LERC/Maslowski, E A	45-Elec Engr		
Chen, D D				

NAG 3-124		Va Polytechnic Inst & St Univ		4463
Characterization of gas turbine combustor noise sources from far-field measurements				
<i>Period</i>		<i>Obligations</i>		
11/03/80-11/02/81		FY81	\$33,132	TOTAL \$33,132
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Mahan, J R	LERC/Krejsa, E A		41-Aero Engr	

<b>NAG 3-172</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4464</b>
<b>Study of the stress wave factor technique for the characterization of composite materials</b>		
<i>Period</i>		<i>Obligations</i>
<b>04/01/81-12/31/81</b>	<b>FY81 \$8,817</b>	<b>TOTAL \$8,817</b>
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Henneke, E G</b>	<b>LERC/Vary, A</b>	<b>47-Materials Engr</b>
<b>Duke, J C</b>		
<b>Stinchcomb, W W</b>		

<b>NAG 3-208</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4465</b>
<b>Graduate research projects in nonlinear and 3-D structural analysis</b>		
<i>Period</i>	<i>Obligations</i>	
<b>08/29/81-08/28/82</b>	<b>FY81 \$29,933</b>	<b>TOTAL \$29,933</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Reddy, J N</b>	<b>LERC/Chamis, C C</b>	<b>41-Aero Engr</b>
	<b>LERC/Hirschbein, M S</b>	

NAG 5-131		Va Polytechnic Inst & St Univ		4466	
Structural-statistical approaches to analysis of macrotextures					
Period		Obligations			
01/01/81-12/31/81		FY81 \$50,000		TOTAL	\$50,000
Prin Invest		NASA Tech Officer		CASE Category	
Haralick, R		GSFC/Masouka, E		32-Geological Sci	

<b>NAG 8-314</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4467</b>
X-ray emission from optically-quiet compact radio sources, Lacertae objects and from bright optically selected quasars under the High Energy Astronomical observatory		
<i>Period</i>	<i>Obligations</i>	
02/01/80-07/31/82	FY81	TOTAL \$2,895
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Odell, S L	MSFC/Jones, J B	11-Astronomy
Ledden, J E		
Condon, J J		

<b>NAG 8-348</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4468</b>
<b>Coordinated High Energy Astronomical Observatory-2 observations of low-frequency variable radio sources</b>		
<i>Period</i>	<i>Obligations</i>	
06/20/80-06/20/82	<b>FY81</b>	<b>TOTAL \$7,475</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
O'Dell, S L	MSFC/Swearingen, J C	11-Astronomy
Dennison, B K		

<b>NAS 1-15080</b>		<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4469</b>
Research in the area of physical sciences			
<i>Period</i>	<i>Obligations</i>		
08/25/77-09/30/81	FY81	\$56,817	TOTAL \$274,078
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Unavailable	LARC/Hohl, F		99-Multi-Discip

<b>NAS 1-16508</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4470</b>
<b>Analysis of Earth experiment sensors</b>	<b>radiation budget/Earth radiation budget</b>	
<i>Period</i>	<i>Obligations</i>	
<b>11/13/80-02/27/82</b>	<b>FY81 \$40,014</b>	<b>TOTAL \$40,014</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Mahan, J R</b>	<b>LARC/Hinton, D E</b>	<b>31-Atmos Sci</b>
	<b>LARC/Jalink, A</b>	

NAS 5-22577	Va Polytechnic Inst & St Univ		4471
Communications link characterization study			
<i>Period</i>	<i>Obligations</i>		
09/08/76-04/07/85	FY81	\$30,000	TOTAL \$896,175
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Bostian, C W	GSFC/Hirschmann, E		45-Elec Engr
Stutzman, W L			
Wiley, P H			

NAS 5-25839		Va Polytechnic Inst & St Univ		4472	
Develop micro and macro texture measures for lands at scenes					
Period		Obligations			
09/07/79-12/30/80		FY81		TOTAL \$40,184	
Prin Invest		NASA Tech Officer		CASE Category	
Havalick, R M		GSFC/Meehan, K T		31-Atmos Sci	

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NAS 5-26199**      **Va Polytechnic Inst & St Univ**      **4473**  
 Services to support a demonstration project to determine the usefulness of LANDSAT data to Virginia's regional land use planning and resource management programs

<i>Period</i>	<i>Obligations</i>	
06/26/80-09/01/81	FY81 \$6,010	TOTAL \$10,005
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Munday, J	GSFC/Gervin, J C	39-Env Sci, NEC

**NAS 5-26276**      **Va Polytechnic Inst & St Univ**      **4474**  
 Applicability of the massive parallel processor (MPP) to the utilization of ecological and landuse models

<i>Period</i>	<i>Obligations</i>	
08/15/80-08/14/81	FY81	TOTAL \$62,731
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Haralick, R	GSFC/Argentiero, P R	29-Math Computer Sci, NEC

**NAS 8-33359**      **Va Polytechnic Inst & St Univ**      **4475**  
 Magnetic fields in cluster of galaxies

<i>Period</i>	<i>Obligations</i>	
05/25/79-05/24/80	FY81	TOTAL \$6,988
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dennison, B K	MSFC/Jones, J B , Jr	11-Astronomy

**NAS 9-16281**      **Va Polytechnic Inst & St Univ**      **4476**  
 Brushless d c Motor and power conditioner fault models

<i>Period</i>	<i>Obligations</i>	
01/01/81-01/01/82	FY81 \$15,000	TOTAL \$15,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nehl, T W	JSC/Edge, J T	22-Computer Science
Demerdash, N A		

**NASW 3357**      **Va Polytechnic Inst & St Univ**      **4477**  
 Dual-polarization space diversity measurements with the Sirio satellite

<i>Period</i>	<i>Obligations</i>	
12/16/79-12/16/80	FY81	TOTAL \$30,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Krebs, A H	HQ-SC/Freibaum, J	31-Atmos Sci
	HQ-SC/Ippolito, L J	

**NCC 1-10**      **Va Polytechnic Inst & St Univ**      **4478**  
 Environmental effects on advanced aerospace materials

<i>Period</i>	<i>Obligations</i>	
08/01/79-01/31/82	FY81	TOTAL \$230,837
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Unnam, J	LARC/Tenney, D R	39-Env Sci, NEC
Houska, C R	LARC/Brewer, W D	

**NCC 1-15**      **Va Polytechnic Inst & St Univ**      **4479**  
 Composite materials research and education

<i>Period</i>	<i>Obligations</i>	
09/01/79-08/31/82	FY81 \$178,432	TOTAL \$549,839
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Herakovich, C T	LARC/Davis, J D , Jr	49-Engr, NEC
Hyer, M W	LARC/Dexter, H B	

**NCC 1-20**      **Va Polytechnic Inst & St Univ**      **4480**  
 Graduate-study research program in aeronautics and air transportation systems

<i>Period</i>	<i>Obligations</i>	
07/01/79-08/31/81	FY81	TOTAL \$79,991
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Hobeika, A G	LARC/Erickson, W D	41-Aero Engr

**NCC 2-71**      **Va Polytechnic Inst & St Univ**      **4481**  
 The accelerated characterization of polymer based fiber reinforced composites

<i>Period</i>	<i>Obligations</i>	
10/01/80-09/30/82	FY81 \$70,306	TOTAL \$136,025
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brinson, H F	ARC/Nelson, H G	47-Materials Engr

**NGL 47-004-067**      **Va Polytechnic Inst & St Univ**      **4482**  
 Measurement of the ground wind structure

<i>Period</i>	<i>Obligations</i>	
06/15/70-09/30/81	FY81	TOTAL \$568,375
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Tieleman, H W	WFC/Schmidlin, F J	31-Atmos Sci

**NGT 47-004-800**      **Va Polytechnic Inst & St Univ**      **4483**  
 Computational study of leading edge vortex flaps, graduate student researcher's program

<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$12,000	TOTAL \$22,250
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Marchman, J F	HQ-LC/Carter, C H	41-Aero Engr

**NGT 47-004-801**      **Va Polytechnic Inst & St Univ**      **4484**  
 Graduate student researchers program

<i>Period</i>	<i>Obligations</i>	
06/01/81-05/31/82	FY81 \$12,500	TOTAL \$12,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Telonis, D P	HQ-LC/Carter, C H	41-Aero Engr

**NSG 1085**      **Va Polytechnic Inst & St Univ**      **4485**  
 Kinetics of the reactions of acid anhydrides with aromatic amines in aprotic solvents

<i>Period</i>	<i>Obligations</i>	
07/01/74-09/30/81	FY81	TOTAL \$93,519
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mason, J G	LARC/Young, P R	12-Chemistry

**NSG 1255**      **Va Polytechnic Inst & St Univ**      **4486**  
 Application of stability theory to laminar flow control

<i>Period</i>	<i>Obligations</i>	
10/01/75-10/31/81	FY81	TOTAL \$347,400
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Nayfeh, A H	LARC/Harris, J E	41-Aero Engr
	LARC/Hefner, J W	

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

**NSG 1262**                      **Va Polytechnic Inst & St Univ**                      **4487**  
Subsonic steady and unsteady aerodynamic loads missiles and aircraft  
*Period*    *Obligations*  
12/01/75-06/15/82                      FY81 \$57,725                      TOTAL \$157,866  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Mook, D T                      LARC/Yates, E C, Jr                      41-Aero Engr  
Nayfeh, A H

**NSG 1354**                      **Va Polytechnic Inst & St Univ**                      **4488**  
Study of an automatic trajectory following control system  
*Period*    *Obligations*  
10/15/76-12/31/81                      FY81                      TOTAL \$113,244  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Vanlandingham, H F                      LARC/Creedon, J F                      41-Aero Engr  
Moose, R L                      LARC/Hueschen, R M

**NSG 1428**                      **Va Polytechnic Inst & St Univ**                      **4489**  
The incorporation of metal ions polyimides  
*Period*    *Obligations*  
07/01/77-05/31/82                      FY81 \$38,228                      TOTAL \$167,982  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Taylor, L T                      LARC/St Clair, A K                      12-Chemistry  
   LARC/St Clair, T L

**NSG 1470**                      **Va Polytechnic Inst & St Univ**                      **4490**  
Control of interface reactions in composites  
*Period*    *Obligations*  
11/07/77-06/30/81                      FY81                      TOTAL \$91,048  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Houska, C R                      LARC/Tenney, D R                      47-Materials Engr  
   LARC/Brewer, W D

**NSG 1524**                      **Va Polytechnic Inst & St Univ**                      **4491**  
New aromatic polyamides containing n-propargyl groups as potential cross linking functions  
*Period*    *Obligations*  
06/01/78-05/31/82                      FY81 \$13,236                      TOTAL \$83,433  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Wolfe, J F                      LARC/St Clair, T L                      12-Chemistry  
   LARC/St Clair, A K

**NSG 1527**                      **Va Polytechnic Inst & St Univ**                      **4492**  
Distributed surface control for large space systems  
*Period*    *Obligations*  
06/01/78-07/31/81                      FY81                      TOTAL \$127,373  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Vanlandingham, H. F                      LARC/Montgomery, R C                      45-Elec Engr  
Johnson, C R

**NSG 1571**                      **Va Polytechnic Inst & St Univ**                      **4493**  
Fracture testing of graphite/polyimide  
*Period*    *Obligations*  
03/27/79-12/31/80                      FY81:                      TOTAL \$25,705  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Morris, D H                      LARC/Everett, R A, Jr                      47-Materials Engr  
   LARC/Crews, J H

**NSG 1598**                      **Va Polytechnic Inst & St Univ**                      **4494**  
Selected parameters to minimize community annoyance from airport noise  
*Period*    *Obligations*  
04/01/79-03/31/82                      FY81 \$56,678                      TOTAL \$129,069  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Frair, L                      LARC/Deloach, R                      99-Multi-Discip

**NSG 1608**                      **Va Polytechnic Inst & St Univ**                      **4495**  
Experiments to verify non-parallel stability theory  
*Period*    *Obligations*  
04/01/79-11/15/81                      FY81 \$95,386                      TOTAL \$232,986  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Sanic, W S                      LARC/Hefner, J N                      41-Aero Engr  
   LARC/Bushnell, D M

**NSG 1621**                      **Va Polytechnic Inst & St Univ**                      **4496**  
Use of two-dimensional transmission photoelastic models to study the stresses in double lap bolted joints  
*Period*    *Obligations*  
09/01/79-11/30/81                      FY81                      TOTAL \$27,802  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Hygr, M W                      LARC/Baker, D J                      47-Materials Engr  
   LARC/Dexter, H B

**NSG 2301**                      **Va Polytechnic Inst & St Univ**                      **4497**  
Near-wall similarity in three-dimensional turbulent flows  
*Period*    *Obligations*  
04/01/78-03/31/82                      FY81 \$62,406                      TOTAL \$224,915  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Pierce, F J                      ARC/Marvin, J G                      41-Aero Engr  
   ARC/Rubens, M W

**NSG 3073**                      **Va Polytechnic Inst & St Univ**                      **4498**  
Studies of internal flowfields of high throat-Mach-number quiet engine inlets  
*Period*    *Obligations*  
10/01/75-10/31/81                      FY81 \$2,000                      TOTAL \$65,122  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Jakubowski, A K                      LERC/Johns, A L                      41-Aero Engr

**NSG 3204**                      **Va Polytechnic Inst & St Univ**                      **4499**  
Ion beam surface modification    Surface analysis and adhesion  
*Period*    *Obligations*  
06/07/78-10/31/81                      FY81                      TOTAL \$39,738  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Dwight, D W                      LERC/Kerslake, W R                      47-Materials Engr

**NSG 3239**                      **Va Polytechnic Inst & St Univ**                      **4500**  
Investigation of torsional-axial-lateral coupled response of geared systems  
*Period*    *Obligations*  
01/02/79-06/15/82                      FY81 \$34,733                      TOTAL \$137,043  
*Prin Invest*    *NASA Tech Officer*                      *CASE Category*  
Mitchell, L D                      LERC/Flemings, D P                      41-Aero Engr  
   LERC/Ludwig, L P

**NASA'S UNIVERSITY PROGRAM**  
**VIRGINIA (Continued)**

<b>NSG 3274</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4501</b>
<b>An improved model for switching converter power stages</b>		
<i>Period</i>	<i>Obligations</i>	
06/01/79-11/29/81	FY81 \$10,532	<b>TOTAL \$40,532</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lee, F C	LERC/Kolecki, J C	45-Elec Engr
	LERC/Terdan, F F	

<b>NSG 3275</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4502</b>
<b>An adaptive controller for an aircraft gas turbine propulsion system</b>		
<i>Period</i>	<i>Obligations</i>	
<b>05/01/79-12/31/81</b>	<b>FY81</b>	<b>TOTAL \$40,713</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Leonard, R G</b>	<b>LERC/Lehtinen, B</b>	<b>41-Aero Engr</b>

<b>NSG 6029</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4503</b>
<b>Demonstration of a peanut leafspot advisory system based on agro-environmental monitoring system data</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/79-03/31/81</b>	<b>FY81</b>	<b>TOTAL \$43,632</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Powell, N L</b>	<b>WFC/Scott, J H</b>	<b>19-Phys Sci, NEC</b>
<b>Phipps, P M</b>		

<b>NSG 6030</b>	<b>Va Polytechnic Inst &amp; St Univ</b>	<b>4504</b>
<b>Agro-environmental monitoring and management model development and implementation program</b>		
<i>Period</i>	<i>Obligations</i>	
04/01/79-09/30/81	FY81 \$21,000	TOTAL \$119,368
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Powell, N L	WFC/Scott, J H	19-Phys Sci, NEC

NSG 6031		Va Polytechnic Inst & St Univ		4505
Development of water management systems for crop production utilizing soil, crop and agro-environmental monitoring systems data				
Period	Obligations			
04/01/79-09/30/81	FY81	\$35,000	TOTAL	\$93,400
Prin Invest	NASA Tech Officer		CASE Category	
Powell, N L	WFC/Scott, J H , Jr		19-Phys Sci, NEC	

NAS 1-16079		Virginia State University	4506
An evaluation of the Langley learning center			
<i>Period</i>		<i>Obligations</i>	
01/08/80-01/07/81	FY81	TOTAL	\$25,460
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>	
Boese, A E	LARC/Owens, F C	99-Multi-Discip	

<b>NSG 1342</b>	<b>Virginia State University</b>	<b>4507</b>
<b>Material science and solid state physics studies with positive muon spin precession</b>		
<i>Period</i>	<i>Obligations</i>	
01/01/77-09/30/82	FY81	TOTAL \$99,824
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stronach, C E	LARC/Singh, J J	13-Physics

<b>NSG 1646</b>	<b>Virginia State University</b>	<b>4508</b>
<b>Medium-energy nuclear physics studies</b>		
<i>Period</i>	<i>Obligations</i>	
10/01/79-05/31/81	FY81	TOTAL \$26,618
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Stronach, C E	LARC/Wilson, J W	13-Physics

## WASHINGTON

NAG 5-187		Evergreen State College		4509
Study of nova outburst				
<i>Period</i>		<i>Obligations</i>		
06/15/81-12/14/81	FY81	\$8,774	TOTAL \$8,774	
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>	
Kutter, G S	GSFC/Sparks, W M	11-Astronomy		

<b>DEN 3-212</b>	<b>University of Washington</b>	<b>4510</b>
Design study of hydraulic output of 15 kw Stirling free piston engine		
<i>Period</i>	<i>Obligations</i>	
12/24/80-08/07/81	FY81 \$84,741	TOTAL \$84,741
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
White, M	LERC/Alger, D A	45-Elec Engr

<b>NAG 1-41</b>	<b>University of Washington</b>	<b>4511</b>
<b>Radiation viewfactor analysis</b>		
<i>Period</i>	<i>Obligations</i>	
03/01/80-02/28/82	FY81 \$44,728	TOTAL \$94,722
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Emery, A F	LARC/Wieting, A R	46-Mech Engr
Kippinham, C J		

NAG I-149		University of Washington		4512
Air-sea interaction studies for satellite measurements				
<i>Period</i>		<i>Obligations</i>		
03/01/81-02/28/82		FY81	\$125,534	TOTAL \$125,534
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
Brown, R A		LARC/Jones, W L		33-Oceanography
Katsaros, K		LARC/Swift, C T.		
Businger, J				

<b>NAG I-176</b>	<b>University of Washington</b>	<b>4513</b>
<b>Study of blackbody-pumped lasers</b>		
<i>Period</i>	<i>Obligations</i>	
<b>04/01/81-01/14/82</b>	<b>FY81 \$34,864</b>	<b>TOTAL \$34,864</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Christiansen, W H</b>	<b>LARC/Deyoung, R J</b>	<b>13-Physics</b>
<b>Hertzberg, A</b>	<b>LARC/Conway, E J</b>	

<b>NAG 2-66</b>	<b>University of Washington</b>	<b>4514</b>
<b>Wave dynamics and transport in the stratosphere</b>		
<i>Period</i>	<i>Obligations</i>	
<b>10/01/80-09/30/82</b>	<b>FY81 \$229,500</b>	<b>TOTAL \$229,500</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Holton, J R</b>	<b>ARC/Summers, A L</b>	<b>31-Atmos Sci</b>

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**NAG 2-80**                      **University of Washington**                      **4515**  
Muscle fiber type distribution relative to muscle weakness A  
new method  
*Period*                                      *Obligations*  
12/01/80-11/30/81                      **FY81 \$35,000**                      **TOTAL \$35,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Unavailable                      ARC/Ellis, S                      51-Biological Sci

**NAG 2-120**                      **University of Washington**                      **4516**  
The modelling of fibrous refractory composite insulation for  
development studies  
*Period*                                      *Obligations*  
07/01/81-06/30/82                      **FY81 \$49,490**                      **TOTAL \$49,490**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Mueller, J I                      ARC/Goldstein, H E 47-Materials Engr  
Bollard, R J

**NAG 3-7**                      **University of Washington**                      **4517**  
In service shaping of abradable seals  
*Period*                                      *Obligations*  
12/01/79-01/08/82                      **FY81 \$39,995**                      **TOTAL \$88,390**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wolak, J                      LERC/Bill, R C                      46-Mech Engr  
   LERC/Ludwig, L P

**NAG 3-16**                      **University of Washington**                      **4518**  
Research related to the technology of radiation machinery and  
high power gas lasers  
*Period*                                      *Obligations*  
12/17/79-01/14/82                      **FY81 \$174,833**                      **TOTAL \$318,027**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hertzberg, A                      LERC/Chubb, D                      13-Physics

**NAG 5-45**                      **University of Washington**                      **4519**  
Observations of selected astronomical objects  
*Period*                                      *Obligations*  
04/15/80-10/31/81                      **FY81 \$6,000**                      **TOTAL \$12,346**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bohm, K H                      GSFC/Boggess, A                      11-Astronomy  
Bohn-vitense, E

**NAG 5-160**                      **University of Washington**                      **4520**  
Remote sensing of sea ice floe size distribution and surface  
topography  
*Period*                                      *Obligations*  
04/01/81-03/31/82                      **FY81 \$101,202**                      **TOTAL \$101,202**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Rothrock, D A                      GSFC/Rao, D B                      33-Oceanography  
Thorndike, A S

**NAG 5-161**                      **University of Washington**                      **4521**  
Research relative to microwave sea ice signatures  
*Period*                                      *Obligations*  
04/15/81-04/14/82                      **FY81. \$44,971**                      **TOTAL \$44,971**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Martin, S                      GSFC/Rao, D B                      33-Oceanography

**NAG 5-207**                      **University of Washington**                      **4522**  
Massive star mass loss during stellar evolution  
*Period*                                      *Obligations*  
09/07/81-09/06/82                      **FY81 \$15,502**                      **TOTAL \$15,502**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hodge, P D                      GSFC/Boggess, A                      11-Astronomy  
Bohm-vitense, E

**NAG 8-342**                      **University of Washington**                      **4523**  
X-ray and optical study of symbiotic stars  
*Period*                                      *Obligations*  
03/01/80-08/31/81                      **FY81**                      **TOTAL \$11,350**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wallerstein, G                      MSFC/Jones, J B                      11-Astronomy  
Wilson, L A

**NAG 8-359**                      **University of Washington**                      **4524**  
X-ray images of spiral-rich clusters of galaxies  
*Period*                                      *Obligations*  
07/01/80-06/30/82                      **FY81**                      **TOTAL \$4,268**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Sullivan, W T                      MSFC/Swearingen, J C                      11-Astronomy

**NAG 8-361**                      **University of Washington**                      **4525**  
X-ray study of four blue galactic emission line objects  
*Period*                                      *Obligations*  
07/01/80-12/31/81                      **FY81**                      **TOTAL \$8,794**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Szkody, P                      MSFC/Swearingen, J C                      11-Astronomy  
Crosa, L M

**NAG 8-364**                      **University of Washington**                      **4526**  
Cluster Hubble-constant study  
*Period*                                      *Obligations*  
06/20/80-06/19/81                      **FY81**                      **TOTAL \$5,970**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Boynton, P E                      MSFC/Swearingen, J C                      11-Astronomy

**NAG 8-366**                      **University of Washington**                      **4527**  
Analysis and interpretation of X-ray timing observations HEAO-1  
guest investigator program  
*Period*                                      *Obligations*  
07/27/80-01/27/82                      **FY81**                      **TOTAL \$21,064**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Boynton, P E                      MSFC/Stone, J F                      11-Astronomy  
Lamb, F E

**NAG 8-378**                      **University of Washington**                      **4528**  
X-ray and IUE study of ball and CH stars  
*Period*                                      *Obligations*  
09/22/80-09/21/81                      **FY81**                      **TOTAL \$7,991**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bohm-vitense, E                      MSFC/Stone, J F                      11-Astronomy



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**NAG 8-399**                      **University of Washington**                      **4529**  
X-ray and optical study of eruptive symbiotic stars  
*Period*                                      *Obligations*  
05/28/81-05/27/82                      FY81 \$7,475                      TOTAL \$7,475  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wallerstein, G                      MSFC/Stone, J F                      11-Astronomy  
Brugel, E W

**NAG 8-405**                      **University of Washington**                      **4530**  
Three interesting extragalactic X-ray candidate objects  
*Period*                                      *Obligations*  
06/18/81-06/17/82                      FY81 \$7,142                      TOTAL \$7,142  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Balick, B                      MSFC/Stone, J F                      11-Astronomy  
Heckman, T  
Leiden, S

**NAG 8-411**                      **University of Washington**                      **4531**  
Coronae of metal poor stars and X-ray observations of 8 Cephei stars  
*Period*                                      *Obligations*  
07/28/81-07/27/82                      FY81 \$17,719                      TOTAL \$17,719  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Bohm-vitense, E                      MSFC/Stone, J F                      11-Astronomy

**NAGW 36**                      **University of Washington**                      **4532**  
Long term Viking Lander meteorology mission operations and analysis  
*Period*                                      *Obligations*  
03/01/80-01/31/82                      FY81 \$146,221                      TOTAL \$196,221  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Tillman, J E                      HQ-SL/Brinton, H C                      31-Atmos Sci

**NAGW 85**                      **University of Washington**                      **4533**  
Geologic remote sensing  
*Period*                                      *Obligations*  
09/16/80-09/15/84                      FY81 \$150,000                      TOTAL \$350,000  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Adams, J B                      HQ-ET/Vitale, J A                      32-Geological Sci

**NAGW 199**                      **University of Washington**                      **4534**  
Interdisciplinary research and development on the effects of the nature and properties of ceramic materials  
*Period*                                      *Obligations*  
07/01/81-06/30/84                      FY81 \$615,500                      TOTAL \$615,500  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Mueller, J I                      HQ-RT/Bersch, C F                      47-Materials Engr

**NAGW 228**                      **University of Washington**                      **4535**  
Analysis of the Viking Lander I surface wind vector for SOLS 45-376  
*Period*                                      *Obligations*  
07/15/81-03/15/82                      FY81 \$20,000                      TOTAL \$20,000  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Leovy, C B                      HQ-SL/Murphy, R E                      31-Atmos Sci  
HQ-SL/Brunk, W E

**NAS 1-14341**                      **University of Washington**                      **4536**  
Science support for the limb infrared monitor of the stratosphere experiment  
*Period*                                      *Obligations*  
04/12/76-09/30/81                      FY81 \$32,978                      TOTAL \$137,330  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Leovy, C B                      LARC/Hinton, D E                      31-Atmos Sci  
LARC/Russell, J M

**NAS 1-16462**                      **University of Washington**                      **4537**  
Scientific investigations for the Earth radiation budget experiment (ERBE)  
*Period*                                      *Obligations*  
09/30/80-09/29/85                      FY81 \$7,000                      TOTAL \$11,020  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hartman, D L                      LARC/Hall, J B                      31-Atmos Sci  
Wallace, J M                      LARC/Barkstrom, B R

**NAS 5-26262**                      **University of Washington**                      **4538**  
Nimbus 7 liquid water and vapor data studies  
*Period*                                      *Obligations*  
09/26/80-09/25/82                      FY81                      TOTAL \$50,000  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Katsaros, K B                      GSFC/Nelson, D                      31-Atmos Sci

**NAS 5-26301**                      **University of Washington**                      **4539**  
Wave dynamics and transport in the middle atmosphere (UARS)  
*Period*                                      *Obligations*  
10/01/80-12/30/81                      FY81                      TOTAL \$10,516  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Holton, J R                      GSFC/Reber, C A                      31-Atmos Sci

**NAS 6-2996**                      **University of Washington**                      **4540**  
Air-sea interaction studies for satellite measurements  
*Period*                                      *Obligations*  
05/01/79-10/31/81                      FY81 \$19,928                      TOTAL \$111,228  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Katsaros, K B                      WFC/Huang, N E                      33-Oceanography  
WFC/Long, S R

**NAS 8-33148**                      **University of Washington**                      **4541**  
Atmospheric cloud physics laboratory gas scavenging experiment  
*Period*                                      *Obligations*  
07/07/78-12/31/81                      FY81 \$76,441                      TOTAL \$176,026  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hobbs, P V                      MSFC/Smith, R E                      31-Atmos Sci  
MSFC/Keller, V W

**NAS 8-33337**                      **University of Washington**                      **4542**  
X-ray and optical study of the high polarization of variable stars (AN UMA)  
*Period*                                      *Obligations*  
02/23/79-07/31/81                      FY81                      TOTAL \$10,925  
*Prnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
Szkody, P                      MSFC/Jones, J B, Jr                      11-Astronomy  
Wallerstein, G  
Crosa, L

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**NAS 8-33884**                      **University of Washington**                      **4543**  
 Research study    Theory of global lightning as seen from a  
 satellite  
*Period*                                      *Obligations*  
 07/22/80-07/21/82                      **FY81**                      **TOTAL \$14,657**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Ely, J T                      MSFC/Smith, R E                      31-Atmos Sci  
    MSFC/Jasper, G

**NAS 9-16052**                      **University of Washington**                      **4544**  
 Life Science Flight Experiment influence of gravity  
*Period*                                      *Obligations*  
 01/17/80-01/31/82                      **FY81**                      **TOTAL \$17,503**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Mlastala, M P                      JSC/French, B O                      59-Life Sci, NEC

**NCA 2-850001**                      **University of Washington**                      **4545**  
 1980 land cover classification for the Puget Sound region  
*Period*                                      *Obligations*  
 03/01/80-09/30/81                      **FY81 \$17,000**                      **TOTAL \$42,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Shinn, R D                      ARC/Wilson, D E                      39-Env Sci, NEC

**NCA 2-850002**                      **University of Washington**                      **4546**  
 Development of remote sensing techniques for Alaska wetlands  
 delineation  
*Period*                                      *Obligations*  
 09/01/80-09/30/81                      **FY81 \$16,700**                      **TOTAL \$25,526**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Westerlund, F V                      ARC/Wilson, D E                      39-Env Sci, NEC

**NCA 2-850101**                      **University of Washington**                      **4547**  
 Use of campus facilities and services to advance options for  
 externalization of Vicar/Ibis  
*Period*                                      *Obligations*  
 03/15/81-09/15/81                      **FY81 \$19,000**                      **TOTAL \$19,000**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Shinn, R D                      ARC/Lumb, D R                      39-Env Sci, NEC

**NCA 2-850102**                      **University of Washington**                      **4548**  
 An analysis of the 4-20 micron excess flux in the spectrum of  
 long period variable stars  
*Period*                                      *Obligations*  
 07/01/81-08/31/81                      **FY81 \$1,500**                      **TOTAL \$1,500**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Cardelli, J A                      ARC/Witteborn, F C                      11-Astronomy  
 Bohm, K H                      ARC/Scargle, J D

**NGL 48-002-004**                      **University of Washington**                      **4549**  
 Multidisciplinary research in materials sciences with emphasis on  
 investigation of inorganic nonmetallic ceramic materials  
*Period*                                      *Obligations*  
 06/28/73-09/30/81                      **FY81 \$129,820**                      **TOTAL \$5,377,897**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Mueller, J I                      HQ-RT/Bersch, C                      47-Materials Engr  
    HQ-RT/Greenfield, M A

**NGL 48-002-047**                      **University of Washington**                      **4550**  
 Interaction shock wave and turbulent boundary layer  
*Period*                                      *Obligations*  
 09/16/67-09/30/81                      **FY81**                      **TOTAL \$442,659**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Childs, M E                      ARC/Chapman, G T                      41-Aero Engr  
    ARC/Presley, L L

**NGR 48-002-141**                      **University of Washington**                      **4551**  
 Research program in aeronautics and air transportation  
*Period*                                      *Obligations*  
 10/01/81-10/31/81                      **FY81 \$50,000**                      **TOTAL \$373,485**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Childs, M E                      ARC/Lee, G                      41-Aero Engr  
 Gessner, F B

**NSG 2362**                      **University of Washington**                      **4552**  
 Direct measurement of extinction by stratospheric aerosols  
*Period*                                      *Obligations*  
 01/01/79-12/31/81                      **FY81 \$60,000**                      **TOTAL \$169,778**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Charlson, R J                      ARC/Page, W A                      31-Atmos Sci  
 Waggoner, A P

**NSG 2365**                      **University of Washington**                      **4553**  
 Configuration interaction  
*Period*                                      *Obligations*  
 07/01/79-12/31/81                      **FY81 \$12,500**                      **TOTAL \$55,500**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Davidson, E R                      ARC/Langhoff, S R                      12-Chemistry

**NSG 3261**                      **University of Washington**                      **4554**  
 Design methods for shock-free cascades with future application  
 to turbomachinery components  
*Period*                                      *Obligations*  
 03/15/79-09/30/81                      **FY81 \$5,310**                      **TOTAL \$77,449**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Dickson, L J                      LERC/Braun, W H                      41-Aero Engr  
 Hertzberg, A

**NSG 5374**                      **University of Washington**                      **4555**  
 Kinematics and physical conditions in shocked clouds in supernova  
 remnants  
*Period*                                      *Obligations*  
 06/01/79-09/30/82                      **FY81**                      **TOTAL \$31,647**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Wallerstein, G                      GSFC/Boggess, A                      11-Astronomy

**NSG 5395**                      **University of Washington**                      **4556**  
 Ultraviolet observations of selected cataclysmic variables  
*Period*                                      *Obligations*  
 07/01/79-11/30/81                      **FY81 \$5,800**                      **TOTAL \$25,404**  
*Pnn Invest*                      *NASA Tech Officer*                      *CASE Category*  
 Szkody, P                      GSFC/Boggess, A                      11-Astronomy

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NSG 5398	University of Washington	4557
Observations of classical stellar chromospheres		
<i>Period</i>	<i>Obligations</i>	
07/15/79-11/30/81	FY81 \$20,500	TOTAL \$39,300
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Bohm-vitense, E	GSFC/Bogges, A	11-Astronomy

NSG 9032	University of Washington	4564
Reflectance spectroscopy of lunar samples		
<i>Period</i>	<i>Obligations</i>	
07/01/75-04/30/82	FY81	TOTAL \$339,805
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Adams, J D	JSC/Warner, J L	32-Geological Sci

<b>NSG 5410</b>	<b>University of Washington</b>	<b>4558</b>
<b>Studies of discrete electromagnetic emissions in the magnetosphere</b>		
<i>Period</i>	<i>Obligations</i>	
09/15/79-03/14/81	FY81	TOTAL \$22,418
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lin. C S	GSFC/Wende. C	11-Astronomy

NSG 9052	University of Washington	4565
A study of interplanetary dust		
<i>Period</i>	<i>Obligations</i>	
03/01/77-02/28/82	FY81 \$192,544	TOTAL \$524,018
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Brownlee, D E	JSC/Warner, J L	31-Atmos Sci

<b>NSG 7085</b>	<b>University of Washington</b>	<b>4559</b>
<b>Dynamics of planetary atmospheres</b>		
<i>Period</i>	<i>Obligations</i>	
07/01/74-09/30/82	FY81 \$63,464	TOTAL \$342,422
<i>Prnt Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Leovy, C B	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

NAG 2-97		Washington State University		4566
Measurement of OH radicals in the lower atmosphere by the 14C tracer method				
Period		Obligations		
03/01/81-02/28/82	FY81	\$80,000	TOTAL	\$80,000
Prin Invest	NASA Tech Officer		CASE Category	
Sheppard, J C	ARC/Page, W A		31-Atmos Sci	
Campbell, M J				

NSG 7173	University of Washington	4560
Application of spectral reflectance of lunar samples to telescopic spectra of unvisited parts of the Moon		
Period	Obligations	
07/01/75-01/31/82	FY81 \$138,878	TOTAL \$323,331
Prin Invest	NASA Tech Officer	CASE Category
Adams, J B	HQ-SL/Quaide, W L	32-Geological Sci
	HQ-SL/French, B M	

NAGW 234		Washington State University		4567
Extinct nuclides in meteorites				
Period		Obligations		
08/15/81-08/14/82	FY81	\$1,500	TOTAL	\$1,500
Prin Invest	NASA Tech Officer		CASE Category	
Srinivasan, B	HQ-SL/French, B M		32-Geological Sci	
	HO-SL/Quede, W L			

NSG 7313		University of Washington		4561
Crystal-liquid distribution coefficients for selected elements				
<i>Period</i>		<i>Obligations</i>		
03/01/77-02/28/82		FY81	\$50,438	TOTAL \$218,341
<i>Prin Invest</i>		<i>NASA Tech Officer</i>		<i>CASE Category</i>
McCallum, I S		HQ-SL/Quaere, W L	32-Geological Sci	
		HO-SL/French, B E		

NCA 2-840001		Washington State University	4568
Joint use of facilities for establishing operational capabilities of Washington state agencies and municipalities in the use of image processing			
Period		Obligations	
04/01/80-08/31/81	FY81	TOTAL	\$25,000
Prin Invest	NASA Tech Officer	CASE Category	
Krebs, L T	ARC/Wilson, D E	39-Env Sci, NEC	
Scuderi, P V			

NSG 7318	University of Washington	4562
Analysis of data on very high energy galactic electrons		
<i>Period</i>	<i>Obligations</i>	
12/01/76-11/30/81	FY81	TOTAL \$93,061
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Lord, J J	HQ-SC/Gilman, D	11-Astronomy
	HQ-SC/Opp, A G	

NCA 2-840002	Washington State University	4569
The physics and chemistry of supported metal clusters		
<i>Period</i>	<i>Obligations</i>	
06/01/80-05/31/82	FY81 \$14,605	TOTAL \$44,605
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Dickinson, J T	ARC/Poppa, H R	13-Physics

<b>NSG 7611</b>	<b>University of Washington</b>	<b>4563</b>
<b>Investigations of Martian meteorological processes using Viking meteorological data</b>		
<i>Period</i>	<i>Obligations</i>	
03/01/79-10/31/81	FY81 \$54,974	TOTAL \$168,974
<i>Prn Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Leovy, C	HQ-SL/Murphy, R E	31-Atmos Sci
	HQ-SL/Brunk, W E	

NCA 2-840102		Washington State University		4570
ESD effects and hydrogen mapping on structured metallic deposits				
Period		Obligations		
06/01/81-05/31/83	FY81	\$30,000	TOTAL	\$30,000
Prin Invest	NASA Tech Officer		CASE Category	
Dickinson, J T	ARC/Poppa, H R		13-Physics	

# **NASA'S UNIVERSITY PROGRAM** **WASHINGTON (Continued)**

**NCC 2-69**                      **Washington State University**                      **4571**  
The nucleation, growth, and in-situ oxidation of microscopic  
crystallites of transition metals on refractory oxide substrates  
*Period*                                      *Obligations*  
04/15/80-04/14/82                      **FY81 \$46,845**                      **TOTAL \$89,017**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dickinson, J T                      ARC/Poppa, H R                      13-Physics  
Anton, R

**NCC 2-118**                      **Washington State University**                      **4572**  
High resolution scanning Auger spectroscopy on advanced turbine  
blade materials  
*Period*                                      *Obligations*  
03/01/81-02/28/82                      **FY81 \$44,579**                      **TOTAL \$44,579**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Dickinson, J T                      ARC/Poppa, H R                      13-Physics  
Larson, L A

**NSG 5383**                      **Washington State University**                      **4573**  
Observations of planetary nebula shells and central stars  
*Period*                                      *Obligations*  
=07/01/79-12/31/81                      **FY81**                      **TOTAL \$5,650**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Lutz, J H                      GSFC/Boggess, A                      11-Astronomy

**NSG 7214**                      **Washington State University**                      **4574**  
Atmospheric measurements of nitrous oxide and the halocar-  
bons  
*Period*                                      *Obligations*  
02/01/76-03/02/82                      **FY81 \$39,207**                      **TOTAL \$331,375**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Cronn, D                      HQ-EB/Watson, R T                      31-Atmos Sci  
Robinson, E                      HQ-EB/Chan, K R

**NCA 2-862101**                      **Western Washington University**                      **4575**  
Infrared and far-infrared interferometer studies of molecules of  
astronomical interest  
*Period*                                      *Obligations*  
03/16/81-01/01/82                      **FY81 \$10,141**                      **TOTAL \$10,141**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Wilson, H M                      ARC/Boese, R W                      12-Chemistry

## **WEST VIRGINIA**

**NGT 49-001-800**                      **West Virginia University**                      **4576**  
Graduate student researchers program  
*Period*                                      *Obligations*  
05/15/81-05/14/82                      **FY81 \$13,000**                      **TOTAL \$13,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Padhye, A                      HQ-LC/Carter, C H                      46-Mech Engr

## **WISCONSIN**

**NAS 8-32901**                      **Beloit College**                      **4577**  
Scientific investigations in support of the space telescope project  
*Period*                                      *Obligations*  
02/22/78-02/22/84                      **FY81**                      **TOTAL \$102,965**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Schroeder, D J                      MSFC/O'Dell, C R                      11-Astronomy

**NAS 8-33355**                      **Beloit College**                      **4578**  
Guest investigation of three young supernova remnants  
*Period*                                      *Obligations*  
06/15/79-06/14/81                      **FY81**                      **TOTAL \$6,922**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Winkler, P F, Jr                      MSFC/Jones, J B, Jr                      11-Astronomy

**NAG 1-65**                      **Marquette University**                      **4579**  
A new observer system for determining orientation of balloon-  
borne observational platforms  
*Period*                                      *Obligations*  
07/01/80-09/30/81                      **FY81**                      **TOTAL \$32,810**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Nigro, N J                      LARC/Hinton, D E                      29-Math Computer Sci, NEC

**NAS 9-15711**                      **Marquette University**                      **4580**  
Alterations in skeletal muscle with disuse atrophy  
*Period*                                      *Obligations*  
09/21/78-12/31/81                      **FY81 \$22,000**                      **TOTAL \$137,000**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Fitts, R H                      JSC/Smith, M C, Jr                      59-Life Sci, NEC

**NCA 2-432201**                      **Medical College of Wisconsin**                      **4581**  
Hypertrophic factors in muscle stretch and activity  
*Period*                                      *Obligations*  
10/01/81-09/30/83                      **FY81 \$25,278**                      **TOTAL \$25,278**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Riley, D A                      ARC/Ellis, S                      56-Medical Sciences

**NAG 1-118**                      **University of Wisconsin - Madison**                      **4582**  
Development of an algorithm for removal of directional ambiguity  
from microwave scatter surface wind measurements  
*Period*                                      *Obligations*  
11/13/80-12/31/81                      **FY81 \$39,324**                      **TOTAL \$39,324**  
*Prin Invest*                      *NASA Tech Officer*                      *CASE Category*  
Hinton, B B                      LARC/Schroeder, L C                      33-Oceanography  
Wylie, D P  
Suomi, V E

**NASA'S UNIVERSITY PROGRAM**  
**WISCONSIN (Continued)**

**NAG 1-212**                      **University of Wisconsin - Madison**                      **4583**  
Measurements systems and instrumentation development for  
energy related pollutants

<i>Period</i>	<i>Obligations</i>	
08/24/81-08/23/82	FY81 \$67,898	TOTAL \$67,898
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Eloranta, E W	LARC/Browell, E V	31-Atmos Sci
Roesler, F L	LARC/Shipley, S T	

**NAG 2-93**                      **University of Wisconsin - Madison**                      **4584**  
Morphology and movements of polarization features

<i>Period</i>	<i>Obligations</i>	
01/01/81-12/31/81	FY81 \$26,914	TOTAL \$26,914
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Limaye, S S	ARC/Fimmel, R O	19-Phys Sci, NEC
Suomi, V E		

**NAG 3-170**                      **University of Wisconsin - Madison**                      **4585**  
Cryogenic energy storage for space applications

<i>Period</i>	<i>Obligations</i>	
03/30/81-03/29/82	FY81 \$28,578	TOTAL \$28,578
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Boom, R W	LERC/Renz, D D	45-Elec Engr
Vansliver, S W		

**NAG 3-174**                      **University of Wisconsin - Madison**                      **4586**  
An investigation of the atmospheric effects on coastal zone color  
scanner (CZCS) data

<i>Period</i>	<i>Obligations</i>	
04/10/81-04/09/82	FY81 \$31,515	TOTAL \$31,515
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Scarpace, F L	LERC/Shook, D F	31-Atmos Sci
Weiler, P R		

**NAG 5-23**                      **University of Wisconsin - Madison**                      **4587**  
Analysis of three-dimensional thunderstorm model output in terms  
of geosynchronous satellite observations

<i>Period</i>	<i>Obligations</i>	
03/01/80-03/31/82	FY81 \$21,733	TOTAL \$42,539
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Schlesinger, R E	GSFC/Adler, R F	31-Atmos Sci

**NAG 5-81**                      **University of Wisconsin - Madison**                      **4588**  
Resolution studies and energy diagnostics of global data and  
climate model simulations

<i>Period</i>	<i>Obligations</i>	
06/15/80-12/14/81	FY81	TOTAL \$38,500
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Johnson, D R	GSFC/Atlas, R M	31-Atmos Sci

**NAG 5-128**                      **University of Wisconsin - Madison**                      **4589**  
New mathematical methods for vocational objective analysis of  
meteorological information

<i>Period</i>	<i>Obligations</i>	
12/01/80-11/30/81	FY81 \$82,931	TOTAL \$82,931
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Wahba, G	GSFC/Rivas, E	31-Atmos Sci
Johnson, D R		

**NAG 5-186**                      **University of Wisconsin - Madison**                      **4590**  
Ultraviolet studies with satellite data

<i>Period</i>	<i>Obligations</i>	
06/15/81-06/14/82	FY81 \$74,376	TOTAL \$74,376
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Savage, B D	GSFC/Boggess, A	11-Astronomy
Code, A D		
Deboer, K S		

**NAG 8-319**                      **University of Wisconsin - Madison**                      **4591**  
A study of soft X-ray absorption by dense interstellar clouds  
under the High Energy Astronomical Observatory-B guest  
investigator program

<i>Period</i>	<i>Obligations</i>	
02/01/80-01/31/81	FY81	TOTAL \$8,233
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Kraushaar, W L	MSFC/Jones, J B	11-Astronomy
Sanders, W T		

**NAG 8-345**                      **University of Wisconsin - Madison**                      **4592**  
Observations and analysis of X-ray emission AE/BE stars  
Simultaneous X-rays and ultraviolet observations of QB super-  
giants, Search and analysis for X-ray emission from luminous early  
type stars

<i>Period</i>	<i>Obligations</i>	
03/01/80-12/31/81	FY81	TOTAL \$27,938
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cassinelli, J P	MSFC/Jones, J B	11-Astronomy

**NAG 8-401**                      **University of Wisconsin - Madison**                      **4593**  
X-ray absorption by dark nebulae

<i>Period</i>	<i>Obligations</i>	
06/15/81-06/17/82	FY81 \$9,305	TOTAL \$9,305
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Sanders, W T	MSFC/Stone, J F	11-Astronomy

**NAG 8-410**                      **University of Wisconsin - Madison**                      **4594**  
Completion of the survey of Wolf Rayet stars which have optical  
OVI emission, X-ray emission from symbiotic stars Ag Dra,  
observations and analysis of X-ray emission from AE/BE stars

<i>Period</i>	<i>Obligations</i>	
07/28/81-07/27/82	FY81 \$25,723	TOTAL \$25,723
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Cassinelli, J P	MSFC/Stone, J F	11-Astronomy
Vanderhucht, K A		

**NAGW 47**                      **University of Wisconsin - Madison**                      **4595**  
Interpretation of results from the Pioneer Venus net radiometer  
experiment

<i>Period</i>	<i>Obligations</i>	
02/01/80-04/30/82	FY81	TOTAL \$50,000
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Suomi, V E	HQ-SL/Brinton, H	31-Atmos Sci

**NASA'S UNIVERSITY PROGRAM  
WISCONSIN (Continued)**

**NAS 1-14136**      **University of Wisconsin - Madison**      **4596**  
Laser radar for meteorological measurements  
*Period*      *Obligations*  
09/11/75-06/30/81      FY81 \$13,594      TOTAL \$799,573  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Eloranta, E      LARC/Browell, E V      31-Atmos Sci  
Weinman, J A      LARC/Carter, A F  
Roesler, F L

**NAS 1-16507**      **University of Wisconsin - Madison**      **4597**  
Science support for the Earth radiation budget experiment (ERBE)  
*Period*      *Obligations*  
10/17/80-10/16/85      FY81 \$16,000      TOTAL \$16,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Smith, W L      LARC/Hall, J B, Jr      31-Atmos Sci  
Suomi, V W      LARC/Barkstrom, B R  
Sromovsky, L A

**NAS 5-21965**      **University of Wisconsin - Madison**      **4598**  
Development of an IR temperature sounder for SMS spacecraft  
*Period*      *Obligations*  
08/01/73-09/30/83      FY81 \$573,285      TOTAL \$3,079,615  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Suomi, V E      GSFC/Montgomery, H E      31-Atmos Sci

**NAS 5-22349**      **University of Wisconsin - Madison**      **4599**  
High resolution spectroscopy for a one meter class UV-optical telescope for Spacelab astronomy missions  
*Period*      *Obligations*  
04/23/75-06/30/81      FY81      TOTAL \$16,247  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Anderson, C M      GSFC/Eiband, A M      11-Astronomy

**NAS 5-22410**      **University of Wisconsin - Madison**      **4600**  
Reduction and analysis of data from OSO-1 soft X-ray background experiment  
*Period*      *Obligations*  
06/26/75-09/30/81      FY81      TOTAL \$682,537  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Kraushaar, W L      GSFC/Gemmell, J      31-Atmos Sci

**NAS 5-23462**      **University of Wisconsin - Madison**      **4601**  
Global atmospheric research project  
*Period*      *Obligations*  
06/07/76-04/30/81      FY81      TOTAL \$335,920  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Suomi, V E      GSFC/Greaves, J R      31-Atmos Sci

**NAS 5-24487**      **University of Wisconsin - Madison**      **4602**  
High speed photometer for the space telescope printer  
*Period*      *Obligations*  
03/08/78-01/31/85      FY81 \$990,051      TOTAL \$3,625,719  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Bless, R C      GSFC/White, R A      11-Astronomy  
GSFC/Mundy, E

**NAS 5-25148**      **University of Wisconsin - Madison**      **4603**  
Technical support to the first GARP global experiment special effort  
*Period*      *Obligations*  
08/18/78-04/17/81      FY81 \$31,276      TOTAL \$372,105  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Suomi, V E      GSFC/Greaves, J R      31-Atmos Sci

**NAS 5-25377**      **University of Wisconsin - Madison**      **4604**  
A study on the meteorological significance of cloud tracked winds during data systems test 5 and 6  
*Period*      *Obligations*  
12/27/78-09/30/81      FY81      TOTAL \$28,160  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Suomi, V E      GSFC/Greaves, J R      31-Atmos Sci  
GSFC/Baker, W

**NAS 5-25487**      **University of Wisconsin - Madison**      **4605**  
Support to the space telescope wide field planetary camera development team  
*Period*      *Obligations*  
02/01/79-10/31/81      FY81 \$29,979      TOTAL \$71,105  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Code, A D      GSFC/Sours, W      11-Astronomy

**NAS 5-25714**      **University of Wisconsin - Madison**      **4606**  
Support of high resolution spectrograph (HRS)  
*Period*      *Obligations*  
05/16/79-03/15/84      FY81 \$57,000      TOTAL \$112,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Savage, B C      GSFC/Vitagliano, H D      11-Astronomy

**NAS 5-25977**      **University of Wisconsin - Madison**      **4607**  
Investigation of Antarctic crust and upper mantle using Magsat and other geophysical data  
*Period*      *Obligations*  
01/18/80-05/17/82      FY81      TOTAL \$83,875  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Bentley, C R      GSFC/Oseroff, H      32-Geological Sci

**NAS 5-26055**      **University of Wisconsin - Madison**      **4608**  
Generate an investigation development plan and establish the preliminary interface for the Wisconsin ultraviolet photoelectric polarimeter experiment  
*Period*      *Obligations*  
02/29/80-12/31/81      FY81 \$199,065      TOTAL \$254,061  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Code, A D      GSFC/Young, E      11-Astronomy

**NAS 5-26078**      **University of Wisconsin - Madison**      **4609**  
Generate an investigation development plan and establish preliminary interfaces for the diffuse soft X-ray Bragg spectrometer  
*Period*      *Obligations*  
03/10/80-03/31/83      FY81 \$144,956      TOTAL \$363,320  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
Kraushaar, W L      GSFC/Sing, M L      11-Astronomy

**NASA'S UNIVERSITY PROGRAM**  
**WISCONSIN (Continued)**

**NAS 5-26345**      **University of Wisconsin - Madison**      **4610**  
 Study climate observing system requirements and capability assessments  
*Period*      *Obligations*  
 09/25/80-09/24/81      FY81      TOTAL \$39,946  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Suomi, V E      GSFC/Thiele, O W      39-Env Sci, NEC

**NAS 5-26423**      **University of Wisconsin - Madison**      **4611**  
 Wisconsin remote sensing applications project  
*Period*      *Obligations*  
 01/01/81-03/31/82      FY81 \$35,000      TOTAL \$35,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Scarpace, F L      GSFC/Middleton, E M      39-Env Sci, NEC

**NAS 5-26454**      **University of Wisconsin - Madison**      **4612**  
 Continued operation of a biomedical applications team  
*Period*      *Obligations*  
 01/26/81-12/31/81      FY81 \$50,000      TOTAL \$50,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Sieband, M P      GSFC/Friedman, D S      56-Medical Sciences  
 Fetzner, W N

**NAS 5-26540**      **University of Wisconsin - Madison**      **4613**  
 First GARP global experiment special effort program  
*Period*      *Obligations*  
 04/07/81-05/06/82      FY81 \$85,869      TOTAL \$85,869  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Suomi, V E      GSFC/Greaves, J R      31-Atmos Sci  
    GSFC/Atlas, R M

**NAS 5-26777**      **University of Wisconsin - Madison**      **4614**  
 Development phase of the Wisconsin ultraviolet photo polarimeter experiment (WUPPE)  
*Period*      *Obligations*  
 09/04/81-12/31/85      FY81 \$678,760      TOTAL \$678,760  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Code, A D      GSFC/Young, E      11-Astronomy  
 Nordsieck, K

**NAS 8-33222**      **University of Wisconsin - Madison**      **4615**  
 Diagnostics of severe convection and sub-synoptic scale geostrophic circulations  
*Period*      *Obligations*  
 06/01/79-12/31/81      FY81 \$70,000      TOTAL \$148,488  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Johnson, D R      MSFC/Turner, R E      31-Atmos Sci  
    MSFC/Johnson, D

**NAS 8-33799**      **University of Wisconsin - Madison**      **4616**  
 Application of the AVE-SESAME data set to mesoscale studies  
*Period*      *Obligations*  
 05/13/80-11/12/82      FY81 \$103,080      TOTAL \$151,609  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Suchman, D      MSFC/Turner, R E      31-Atmos Sci  
 Wash, C H      MSFC/Hill, C K

**NAS 8-33954**      **University of Wisconsin - Madison**      **4617**  
 Mcdas meteorological data system  
*Period*      *Obligations*  
 04/01/81-05/06/81      FY81 \$71,369      TOTAL \$71,369  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Fox, R      MSFC/Turner, R E      31-Atmos Sci  
    MSFC/Wilson, G

**NAS 8-34557**      **University of Wisconsin - Madison**      **4618**  
 Mcdas enhancement package version II-B  
*Period*      *Obligations*  
 09/24/81-03/02/82      FY81 \$15,000      TOTAL \$15,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Fox, R      MSFC/Turner, R E      31-Atmos Sci  
    MSFC/Wilson, G

**NAS 9-15580**      **University of Wisconsin - Madison**      **4619**  
 Vitamin D metabolites and bone demineralization  
*Period*      *Obligations*  
 04/01/78-12/01/81      FY81 \$49,842      TOTAL \$214,842  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Schnoes, H K      JSC/Cintrón, N M      56-Medical Sciences  
 Holton, E M  
 Deluca, H F

**NASW 3476**      **University of Wisconsin - Madison**      **4620**  
 Development of a centralized storm information system (CSIS) at the national weather service storms center  
*Period*      *Obligations*  
 04/19/81-08/18/81      FY81 \$1,000,000      TOTAL \$1,000,000  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Suomi, V E      HQ-EB/Dodge, J C      31-Atmos Sci  
    HQ-EB/Tilford, S G

**NCC 2-136**      **University of Wisconsin - Madison**      **4621**  
 Controlled environment injuries to plants  
*Period*      *Obligations*  
 05/01/81-04/30/82      FY81 \$63,184      TOTAL \$63,184  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Tibbitts, T W      ARC/Zill, L P      55-Agriculture Sci

**NGL 50-002-013**      **University of Wisconsin - Madison**      **4622**  
 Investigations and studies of ultraviolet stellar spectra and associated instrumentation  
*Period*      *Obligations*  
 05/20/64-04/30/82      FY81      TOTAL \$2,861,490  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Code, A D      GSFC/Guidotti, T      11-Astronomy

**NGL 50-002-044**      **University of Wisconsin - Madison**      **4623**  
 Research in cosmic and solar physics  
*Period*      *Obligations*  
 10/25/65-12/31/83      FY81 \$180,000      TOTAL \$2,712,626  
*Prin Invest*      *NASA Tech Officer*      *CASE Category*  
 Kraushaar, W L      GSFC/Guidotti, J G      11-Astronomy

### NASA'S UNIVERSITY PROGRAM WISCONSIN (Continued)

<b>NGL 50-002-127</b>	<b>University of Wisconsin - Madison</b>	<b>4624</b>
<b>Multidisciplinary research in space science and engineering</b>		
<i>Period</i>	<i>Obligations</i>	
<b>12/19/69-12/31/81</b>	<b>FY81</b>	<b>TOTAL \$1,737,000</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Kiefer, R W</b>	<b>HQ-ET/Vitale, J A</b>	<b>39-Env Sci, NEC</b>

NGR 50-002-051	University of Wisconsin - Madison	4625
Applications of the direct photon absorption techniques for measuring bone-mineral content		
<i>Period</i>	<i>Obligations</i>	
10/01/81-12/31/81	FY81 \$27,000	TOTAL \$683,269
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Mazess, R B	ARC/Young, D R	56-Medical Sciences
Cameron, J R		

<b>NGR 50-002-162</b>		<b>University of Wisconsin - Madison</b>	<b>4626</b>
<b>Solar wind physics</b>			
<i>Period</i>	<i>Obligations</i>		
01/26/71-07/30/82	FY81	\$21,000	TOTAL \$419,463
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Scherb, F	HQ-SC/Mayr, H G		13-Physics
	HQ-SC/Schmerling, E R		

NGR 50-002-189		University of Wisconsin - Madison	4627
Cloud image processing for planetary flybys			
<i>Period</i>		<i>Obligations</i>	
01/19/72-11/30/81	FY81	\$186,000	TOTAL \$344,083
<i>Prin Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Suomi, V E	HQ-SL/Brinton, H C		31-Atmos Sci
Eichberg, J			

NSG 2104	University of Wisconsin - Madison	4628
Viral etiology and epidemiology of respiratory infection in an isolated Antarctic station		
Period	Obligations	
09/01/75-11/30/81	FY81 \$35,000	TOTAL \$215,000
Prin Invest	NASA Tech Officer	CASE Category
Dick, E C	ARC/Mandel, A D	56-Medical Sciences

<b>NSG 5152</b>	<b>University of Wisconsin - Madison</b>	<b>4629</b>
<b>Research of clouds and ice in the planetary scale circulation and in climate</b>		
<i>Period</i>	<i>Obligations</i>	
<b>01/01/77-01/31/83</b>	<b>FY81</b>	<b>TOTAL \$262,874</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Kutzbach, J E</b>	<b>GSFC/Halem, M</b>	<b>31-Atmos Sci</b>
<b>Suomi, V E</b>		

NSG 5223	University of Wisconsin - Madison	4630
Research of the effect of synoptic scale processes in global circulation models modelling		
Period	Obligations	
01/16/78-12/14/81	FY81 \$59,060	TOTAL \$201,560
Prin Invest	NASA Tech Officer	CASE Category
Herman, G F	GSFC/Halem, M	31-Atmos Sci

NSG 5251	University of Wisconsin - Madison	4631
Investigation of computer processing method of multiple geostationary satellite transmissions for cloud height determination		
<i>Period</i>	<i>Obligations</i>	
03/01/78-03/31/80	FY81	TOTAL \$34,864
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Suomi, V E	GSFC/Minzner, R A	31-Atmos Sci
Stremler, F G	GSFC/Shenk, W E	

NSG 5252	University of Wisconsin - Madison	4632
Optimum employment of satellite		
<i>Period</i>	<i>Obligations</i>	
03/15/78-12/31/81	FY81	TOTAL \$123,995
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Horn, L H	GSFC/Halem, M	31-Atmos Sci

NSG 5363	University of Wisconsin - Madison	4633
Studies of the ultraviolet spectra of astronomical sources		
<i>Period</i>	<i>Obligations</i>	
06/01/79-07/31/81	FY81 \$51,541	TOTAL \$159,201
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Code, A D	GSFC/Bogges, A	11-Astronomy
Savage, B D		

NSG 7050	University of Wisconsin - Madison	4634
Data analysis of OAO-2 ultraviolet spectrophotometry		
Period	Obligations	
07/01/74-09/30/80	FY81	TOTAL \$421,267
Prin Invest	NASA Tech Officer	CASE Category
Code, A D	HQ-SC/Weiler, E J	11-Astronomy
	HQ-SC/Roman, N G	

NSG 7521	University of Wisconsin - Madison	4635
Origin of bacteria		
<i>Period</i>	<i>Obligations</i>	
01/01/79-03/31/81	FY81	TOTAL \$82,550
<i>Prim Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Fitch, W M	HQ-SB/Devincenzi, D L	
		51-Biological Sci

NAG 5-209		University of Wisconsin - Milwaukee	4636
Hydro and biodynamics of the developing thermal front in Lake Michigan			
<i>Period</i>		<i>Obligations</i>	
09/15/81-01/31/82	FY81	\$3,000	TOTAL \$3,000
<i>Pnn Invest</i>	<i>NASA Tech Officer</i>		<i>CASE Category</i>
Mortimer, C H	GSFC/Rao, D B		33-Oceanography

<b>NAS 8-34506</b>	<b>Univ Wisconsin-Platteville</b>	<b>4637</b>
<b>Kinematic and dynamic analysis of deployable space structures</b>		
<i>Period</i>	<i>Obligations</i>	
<b>09/03/81-07/02/82</b>	<b>FY81 \$12,737</b>	<b>TOTAL \$12,737</b>
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
<b>Stoll, H W</b>	<b>MSFC/Kiefling, L A</b>	<b>46-Mech Engr</b>
	<b>MSFC/Jewell, R E</b>	



# NASA'S UNIVERSITY PROGRAM WYOMING

## WYOMING

**NAG 2-65**                      **University of Wyoming**                      **4638**  
 Balloon-borne measurements of stratospheric condensation nuclei  
*Period*                                      *Obligations*  
 07/01/80-02/28/82                      FY81 \$93,831                      TOTAL \$93,831  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Rosen, J M                      ARC/Toon, O B                      31-Atmos Sci  
 Hofmann, D J

**NAGW 174**                      **University of Wyoming**                      **4639**  
 Magnetism and microcracks  
*Period*                                      *Obligations*  
 04/01/81-03/31/82                      FY81 \$45,682                      TOTAL \$45,682  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Shive, P N                      HQ-SL/Quaide, W L                      32-Geological Sci  
 HQ-SL/French, B M

**NAS 1-14373**                      **University of Wyoming**                      **4640**  
 Science support for the Nimbus G stratospheric aerosol measurement experiment  
*Period*                                      *Obligations*  
 04/02/76-12/21/81                      FY81                      TOTAL \$211,131  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Pepin, T J                      LARC/McCormick, M P                      31-Atmos Sci  
 LARC/McMaster, L R

**NAS 1-14931**                      **University of Wyoming**                      **4641**  
 Stratospheric aerosol and gas experiment  
*Period*                                      *Obligations*  
 07/19/77-09/30/82                      FY81 \$20,000                      TOTAL \$139,684  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Pepin, T J                      LARC/McMaster, L R                      31-Atmos Sci  
 LARC/McCormick, M P

**NAS 1-15377**                      **University of Wyoming**                      **4642**  
 Balloon-borne aerosol measurements                      Ground truth for SAM II  
*Period*                                      *Obligations*  
 05/04/78-12/31/80                      FY81                      TOTAL \$109,725  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Hofmann, D J                      LARC/McMaster, L R                      31-Atmos Sci  
 Rosen, J M                      LARC/McCormick, M P

**NAS 1-16305**                      **University of Wyoming**                      **4643**  
 Science support for Earth radiation budget satellite/stratospheric aerosol and gas experiment  
*Period*                                      *Obligations*  
 06/27/80-06/26/85                      FY81 \$12,000                      TOTAL \$52,540  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Pepin, T J                      LARC/McMaster, L R                      31-Atmos Sci  
 LARC/McCormick, M P

**NAS 1-16557**                      **University of Wyoming**                      **4644**  
 Determination of stiffness reductions during fatigue of unnotched, angle-ply graphite/epoxy laminates  
*Period*                                      *Obligations*  
 01/12/81-03/26/82                      FY81 \$23,650                      TOTAL \$23,650  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Adams, D F                      LARC/O'Brien, T K                      47-Materials Engr  
 Walrath, D E                      LARC/Roderick, G L

**NAS 8-33150**                      **University of Wyoming**                      **4645**  
 Atmospheric cloud physics laboratory ice forming experiment preliminary definition  
*Period*                                      *Obligations*  
 08/07/78-11/30/81                      FY81 \$53,100                      TOTAL \$143,338  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Vali, G                      MSFC/Smith, R E                      31-Atmos Sci  
 MSFC/Keller, V W

**NSG 1518**                      **University of Wyoming**                      **4646**  
 Preliminary aerosol measurement (PAM II) data reduction  
*Period*                                      *Obligations*  
 04/15/78-07/14/80                      FY81                      TOTAL \$133,821  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Pepin, T J                      LARC/McMaster, L R                      31-Atmos Sci  
 LARC/McCormick, M P

**NSG 3217**                      **University of Wyoming**                      **4647**  
 Energy absorption mechanisms during crack propagation in metal matrix composites  
*Period*                                      *Obligations*  
 08/01/78-07/29/82                      FY81 \$40,000                      TOTAL \$143,810  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Adams, D F                      LERC/Dicarlo, J A                      47-Materials Engr  
 LERC/Grimes, H H

## PUERTO RICO

**NAGW 198**                      **University of Puerto Rico - Mayaguez**                      **4648**  
 Study of seawater corrosion rate of zinc diffusion protected aluminum surface  
*Period*                                      *Obligations*  
 05/01/81-11/30/81                      FY81 \$257,500                      TOTAL \$257,500  
*Pnn Invest*                                      *NASA Tech Officer*                      *CASE Category*  
 Sasser, D S                      HQ-LG/Goldberg, S                      47-Materials Engr

# NASA'S UNIVERSITY PROGRAM CANADA

## CANADA

**NSG 7409**                      **University of Toronto**                      **4649**  
Application of the cubic strength criterion to the failure analysis  
of composite structures  
*Period*                                      *Obligations*  
03/01/78-05/31/82                      FY81 \$24,440                      TOTAL \$47,320  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Tennyson, R C                      LARC/Baker, D J                      47-Materials Engr  
LARC/Pride, R A

**NSG 7647**                      **University of Toronto**                      **4650**  
Electron beam charging and arc discharging of spacecraft  
insulating materials  
*Period*                                      *Obligations*  
10/01/79-02/28/82                      FY81 \$59,400                      TOTAL \$111,872  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Balmain, K G                      LERC/Staskus, J V                      45-Elec Engr

**NAGW 130**                      **University of Waterloo**                      **4651**  
Non-linear supersonic/hypersonic aerodynamic stability at high  
angles of attacks  
*Period*                                      *Obligations*  
10/01/80-09/30/81                      FY81 \$16,885                      TOTAL \$16,885  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Hui, W H                      ARC/Chapman, G T                      41-Aero Engr  
ARC/Tobak, M

## CHILE

**NAS 5-1925**                      **University of Chile**                      **4652**  
Maintenance and operation of minitrack facilities  
*Period*                                      *Obligations*  
09/21/62-10/31/81                      FY81 \$7,000,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Diaz, E                      GSFC/Force, C A                      99-Multi-Discip  
GSFC/Spintman, D

## GREAT BRITAIN

**NASW 3258**                      **Imperial College of Science & Technology**                      **4653**  
Benchmark experiments in subsonic diffusers programs/  
benchmark measurements in three-D subsonic diffusers  
*Period*                                      *Obligations*  
04/15/79-04/15/80                      FY81                      TOTAL \$74,340  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Whitelaw, J                      LERC/Povinelli, L A                      46-Mech Engr

**NASW 3435**                      **Imperial College of Science & Technology**                      **4654**  
A three dimensional 's' duct benchmark experiment  
*Period*                                      *Obligations*  
12/16/80-01/16/82                      FY81 \$88,596                      TOTAL \$88,596  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Rackham, O                      LERC/Povinelli, L A                      99-Multi-Discip

**NCCW 1**                      **University of Manchester**                      **4655**  
Wind tunnel test of an ogive-cylinder body at high angles of  
attack  
*Period*                                      *Obligations*  
06/15/80-10/15/80                      FY81 \$5,130                      TOTAL \$5,130  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Lamont, P J                      ARC/Malcolm, G N                      41-Aero Engr

**NASW 3301**                      **University of Oxford**                      **4656**  
Nimbus type pressure modular drive  
*Period*                                      *Obligations*  
11/01/79-01/31/80                      FY81                      TOTAL \$14,950  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Unavailable                      LARC/Hinton, D                      45-Elec Engr

**NSG 7517**                      **University of Sheffield**                      **4657**  
Vaporization of droplets in premixing chambers  
*Period*                                      *Obligations*  
10/01/78-09/30/81                      FY81 \$50,000                      TOTAL \$160,000  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Chigier, N A                      LERC/Lyons, V J                      43-Chem Engr  
Yule, A J

**NSG 7172**                      **University of Southampton**                      **4658**  
Self-streamlining of the test section of a transonic wind tunnel  
*Period*                                      *Obligations*  
10/01/75-12/31/81                      FY81 \$57,000                      TOTAL \$278,026  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Goodyer, M J                      LARC/Ladson, C L                      41-Aero Engr

**NSG 7523**                      **University of Southampton**                      **4659**  
Investigations into the technology required to raise reliability levels  
of magnetic suspension system  
*Period*                                      *Obligations*  
01/01/79-01/31/82                      FY81 \$92,570                      TOTAL \$156,960  
*Prin Invest*                                      *NASA Tech Officer*                      *CASE Category*  
Goodyer, M J                      LARC/Boyden, R P                      41-Aero Engr  
LARC/Kilgore, R A

**NASA'S UNIVERSITY PROGRAM**  
**ISRAEL**

**ISRAEL**

<b>NAGW 218</b>	<b>Israel Institute of Technology</b>	<b>4660</b>
Calculation of high angle of attack stability deviates for wings in unsteady motion gas in unsteady motion		
<i>Period</i>	<i>Obligations</i>	
05/01/81-04/30/82	FY81 \$15,200	TOTAL \$15,200
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Katz, J	ARC/Schiff, L B	41-Aero Engr
	ARC/Maloolm, G N	

**ITALY**

<b>NASW 2135</b>	<b>University of Rome</b>	<b>4661</b>
Back-up data acquisition		
<i>Period</i>	<i>Obligations</i>	
10/21/71-06/30/81	FY81 \$223,578	TOTAL \$839,033
<i>Prin Invest</i>	<i>NASA Tech Officer</i>	<i>CASE Category</i>
Broghio, L	HQ-TN/Bavely, J C	11-Astronomy
	HQ-TN/Stockwell, E J	

# NASA'S UNIVERSITY PROGRAM

## APPENDIX

### CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

The Fields used here are specified by Amendment J, "Standard Classification of Fields of Science and Engineering," to Office of Management and Budget (OMB) Circular A-46, "Standards for Statistical Surveys" Field codes are interpreted as follows

<i>PHYSICAL SCIENCES</i>	<i>ENVIRONMENTAL SCIENCES (Terrestrial and extraterrestrial)</i>	<i>LIFE SCIENCES</i>	<i>SOCIAL SCIENCES</i>
11 ASTRONOMY	31 ATMOSPHERIC SCIENCES	51 BIOLOGICAL SCIENCES	71 ANTHROPOLOGY
12 CHEMISTRY	32 GEOLOGICAL SCIENCES	54 ENVIRONMENTAL BIOLOGY	72 ECONOMICS
13 PHYSICS	33 OCEANOGRAPHY	55 AGRICULTURAL SCIENCES	73 HISTORY
19 PHYSICAL SCIENCES, NEC*	39 ENVIRONMENTAL SCIENCES, NEC*	56 MEDICAL SCIENCES	74 LINGUISTICS
		59 LIFE SCIENCES, NEC*	75 POLITICAL SCIENCE
			76 SOCIOLOGY
			79 SOCIAL SCIENCE, NEC*
 <i>ENGINEERING</i>			
<i>MATHEMATICAL/ COMP SCI</i>	41 AERONAUTICAL		
	42 ASTRONAUTICAL		
	43 CHEMICAL		
21 MATHEMATICS	44 CIVIL	<i>PSYCHOLOGY</i>	
22 COMPUTER SCIENCES	45 ELECTRICAL		
29 MATHEMATICAL COMPUTER SCIENCES, NEC*	46 MECHANICAL	61 BIOLOGICAL	<i>OTHER SCIENCES**</i>
	47 METALLURGY AND MATERIALS	62 SOCIAL ASPECTS	
	49 ENGINEERING, NEC*	69 PSYCHOLOGY, NEC*	99 ALL DISCIPLINE(S)

\*Not Elsewhere Classified (For interdisciplinary projects and others not listed by discipline name)

\*\*For interdisciplinary projects which cannot be classified within any of the preceding main fields

Abbreviations used in the "Technical Officer Locations" column are discussed in the prefatory pages.

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
11	BELOIT COLLEGE	O'Dell, C R	MSFC	Schroeder, D J	NAS 8-32901	4577
11	BELOIT COLLEGE	Jones, J B, Jr	MSFC	Winkler, P F, Jr	NAS 8-33355	4578
11	BOSTON UNIVERSITY	Boggess, A	GSFC	Kamp, L W	NAS 5-25445	2753
11	BOSTON UNIVERSITY	Leckronz, D S	GSFC	Kamp, L W	NSG 5389	2762
11	BOSTON UNIVERSITY	Corrigan, J P	GSFC	Hughes, W J	NSG 5407	2763
11	BOWLING GRN STATE U	Boggess, A	GSFC	Gregory, S	NAG 5-64	3564
11	BRANDEIS UNIVERSITY	Stone, J F	MSFC	Wardle, J F	NAG 8-413	2765
11	BRANDEIS UNIVERSITY	Jones, J B, Jr	MSFC	Ghigo, F D	NAS 8-33343	2766
11	BRIGHAM YOUNG UNIV	Boggess, A	GSFC	McNamara, D H	NAG 5-62	4266
11	CALIF INST OF TECH	Haughney, L C	ARC	Phillips, T G	NAG 2-1	1231
11	CALIF INST OF TECH	Werner, M W	ARC	Leighton, R B	NAG 2-125	1232
11	CALIF INST OF TECH	Fimmel, R O	ARC	Ingersoll, A P	NAS 2-6556	1258
11	CALIF INST OF TECH	Werner, M W	ARC	Soifer, B T	NCA 2-90101	1270
11	CALIF INST OF TECH	Boggess, A	GSFC	Sargent, W L	NAG 5-4	1235
11	CALIF INST OF TECH	Boggess, A	GSFC	Soifer, B T	NAG 5-47	1236
11	CALIF INST OF TECH	Boggess, A	GSFC	Trauger, J T	NAG 5-66	1237
11	CALIF INST OF TECH	Boggess, A	GSFC	Cohen, J G	NAG 5-68	1238
11	CALIF INST OF TECH	Sours, W P	GSFC	Westphal, J	NAS 5-25451	1262
11	CALIF INST OF TECH	Gemmell, J D	GSFC	Stone, E C	NAS 5-25789	1263
11	CALIF INST OF TECH	Guidotti, J	GSFC	Garmire, G P	NGR 05-002-284	1284
11	CALIF INST OF TECH	Boggess, A	GSFC	Oke, J B	NSG 5243	1290
11	CALIF INST OF TECH	Boggess, A	GSFC	Schmidt, M	NSG 5244	1291
11	CALIF INST OF TECH	Boggess, A	GSFC	Sargent, W L	NSG 5369	1295
11	CALIF INST OF TECH	Boggess, A	GSFC	Greenstein, J L	NSG 5381	1296
11	CALIF INST OF TECH	Boggess, A	GSFC	Meier, D L	NSG 5384	1297
11	CALIF INST OF TECH	Jones, J B	MSFC	Zirin, H	NAG 8-304	1239
11	CALIF INST OF TECH	Jones, J B	MSFC	Zirin, H	NAG 8-313	1240
11	CALIF INST OF TECH	Jones, J B	MSFC	Decampli, W D	NAG 8-322	1241
11	CALIF INST OF TECH	Jones, J B	MSFC	Garmire, G P	NAG 8-324	1242
11	CALIF INST OF TECH	Stone, J F	MSFC	Garmire, G	NAG 8-374	1243

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
11	CALIF INST OF TECH	Stone, J F	MSFC	Pravdo, S H	NAG 8-376	1244
11	CALIF INST OF TECH	Stone, J F	MSFC	Sargent, W L	NAG 8-406	1245
11	CALIF INST OF TECH	Stone, J F	MSFC	Prince, T A	NAG 8-412	1246
11	CALIF INST OF TECH	Stone, J F	MSFC	Stone, E C	NAS 8-27978	1264
11	CALIF INST OF TECH	Jones, J B	MSFC	Garmine, G P	NAS 8-33331	1268
11	CALIF INST OF TECH	Jones, J B	MSFC	Garmire, G P	NAS 8-33352	1269
11	CALIF INST OF TECH	Boggess, N W	HQ-SC	Phillips, T	NAGW 107	1248
11	CALIF INST OF TECH	Chipman, E	HQ-SC	Zirin, H	NGL 05-002-034	1273
11	CALIF INST OF TECH	Weiler, E J	HQ-SC	Oke, J B	NGL 05-002-134	1275
11	CALIF INST OF TECH	Boggess, N W	HQ-SC	Neugebauer, G	NGL 05-002-207	1279
11	CALIF INST OF TECH	Gilman, D A	HQ-SC	Vogt, R E	NGR 05-002-160	1282
11	CALIF INST OF TECH	Roman, N G	HQ-SC	Thorne, K S	NGR 05-002-256	1283
11	CALIF INST OF TECH	Roman, N G	HQ-SC	Mashhoon, B	NSG 7495	1302
11	CALIF INST OF TECH	Brunk, W E	HQ-SL	Muhleman, D O	NGL 05-002-003	1272
11	CALIF INST OF TECH	Brunk, W E	HQ-SL	Soifer, B T	NGL 05-002-140	1276
11	CALIF INST OF TECH	Brunk, W E	HQ-SL	Muhleman, D O	NGR 05-002-114	1281
11	CALIF INST OF TECH	Quaide, W L	HQ-SL	Neugebauer, M G	NSG 7635	1305
11	CASE WESTERN RESERVE	Boggess, A	GSFC	Shore, S N	NAG 5-179	3591
11	CASE WESTERN RESERVE	Kaluzienski, L J	HQ-SC	Frye, G	NASW 3404	3600
11	CITADEL MLTRY CO S C	Boggess, A	GSFC	Adelman, S J	NSG 5420	3967
11	CITY COLLEGE OF N Y	Black, D C	ARC	Yuan, C	NSG 2348	3307
11	CITY COLLEGE OF N Y	Canuto, V	GSFC	Arons, M	NGL 33-013-040	3305
11	COLUMBIA UNIVERSITY	Stouffer, C	GSFC	Novick, R	NAS 5-24457	3320
11	COLUMBIA UNIVERSITY	Sing, M	GSFC	Novick, R	NAS 5-26041	3324
11	COLUMBIA UNIVERSITY	Guidotti, J	GSFC	Novick, R	NGR 33-008-102	3334
11	COLUMBIA UNIVERSITY	Stone, J F	MSFC	Novick, R	NAS 8-30753	3326
11	COLUMBIA UNIVERSITY	Kaluzienski, L J	HQ-SC	Novick, R	NAGW 18	3317
11	COLUMBIA UNIVERSITY	Boggess, N W	HQ-SC	Flynn, G	NSG 7105	3338
11	CORNELL UNIVERSITY	Haughney, L C	ARC	Houck, J R	NGR 33-010-081	3364
11	CORNELL UNIVERSITY	Mason, R H	ARC	Harwit, M O	NGR 33-010-146	3367
11	CORNELL UNIVERSITY	Cameron, R M	ARC	Houck, J R	NGR 33-010-182	3369
11	CORNELL UNIVERSITY	Haughney, L C	ARC	Harwit, M	NSG 2347	3373
11	CORNELL UNIVERSITY	Haughney, L C	ARC	Beckwith, S	NSG 2412	3376
11	CORNELL UNIVERSITY	Cohen, S C	GSFC	Turcotte, D L	NCC 5-2	3359
11	CORNELL UNIVERSITY	Boggess, N W	HQ-SC	Houck, J R	NSG 7324	3382
11	CORNELL UNIVERSITY	Brunk, W E	HQ-SL	Ostro, S J	NAGW 116	3353
11	DARTMOUTH COLLEGE	Jones, J B	MSFC	Mook, D E	NAG 8-305	3188
11	DREXEL UNIVERSITY	Magnotre, W C	GSFC	Abbar, M	NAG 5-208	3824
11	DUKE UNIVERSITY	Boggess, N W	HQ-SC	Herbst, E	NAGW 189	3523
11	EVERGREEN STATE COL	Sparks, W M	GSFC	Kutter, G S	NAG 5-187	4509
11	FLORIDA STATE UNIV	Brunk, W E	HQ-SL	Hunt, R H	NGR 10-004-056	2112
11	GEORGE MASON UNIV	Michalitsianos, A G	GSFC	Kafatos, M	NAG 5-124	4323
11	GEORGE MASON UNIV	Hobbs, R W	GSFC	Kafatos, M	NCA 5-92	4325
11	GEORGE MASON UNIV	Boggess, A	GSFC	Kafatos, M	NSG 5371	4326
11	GEORGE MASON UNIV	Gull, T R	GSFC	Kafatos, M	NSG 5403	4327
11	HARVARD UNIVERSITY	Boggess, A	GSFC	Grindlay, J E	NAG 5-72	2770
11	HARVARD UNIVERSITY	Boggess, A	GSFC	Geller, M	NAG 5-189	2772
11	HARVARD UNIVERSITY	Boggess, A	GSFC	Dupree, A K	NSG 5370	2803
11	HARVARD UNIVERSITY	Jones, J B	MSFC	Rosner, R	NAG 8-302	2773
11	HARVARD UNIVERSITY	Jones, J B	MSFC	Dupree, A K	NAG 8-344	2774
11	HARVARD UNIVERSITY	Snoddy, W C	MSFC	Hughes, B M	NAS 5-3949	2779
11	HARVARD UNIVERSITY	Bohlin, J D	HQ-SC	Parkinson, W H	NGR 22-007-202	2795
11	HARVARD UNIVERSITY	Kaluzienski, L J	HQ-SC	Cameron, A G	NGR 22-007-272	2797
11	HOUSTON BAPTIST UNIV	Kondo, Y	GSFC	Modisette, J L	NSG 5421	4043
11	HOUSTON BAPTIST UNIV	Potter, A E	JSC	Morgan, T H	NSG 9038	4044
11	HOWARD UNIVERSITY	Haughney, L C	ARC	Richard, L J	NAG 2-78	2063
11	HOWARD UNIVERSITY	Boggess, A	GSFC	Jackson, W M	NAG 5-65	2066
11	HOWARD UNIVERSITY	Stone, J F	MSFC	Kumar, C K	NAG 8-371	2071

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
11	HOWARD UNIVERSITY	Stone, J F	MSFC	Kumar, C K	NAG 8-395	2072
11	HOWARD UNIVERSITY	Carter, C H	HQ-LC	Jackson, W	NGT 09-011-800	2085
11	INDIANA U-BLOOMINGTN	Cuzzi, J N	ARC	Durisen, R H	NCA 2-335101	2389
11	INDIANA U-BLOOMINGTN	Bogges, A	GSFC	Johnson, H R	NAG 5-182	2378
11	INDIANA U-BLOOMINGTN	Bogges, A	GSFC	Kondo, Y	NAG 5-198	2379
11	INDIANA U-BLOOMINGTN	Hobbs, R W	GSFC	Burkhead, M S	NAS 5-22987	2386
11	INDIANA U-BLOOMINGTN	Jones, J B	MSFC	Mufson, S L	NAG 8-331	2380
11	INDIANA U-BLOOMINGTN	Stone, J F	MSFC	Durisen, R H	NAG 8-362	2381
11	INDIANA U-BLOOMINGTN	Stone, J F	MSFC	Mufson, S L	NAG 8-365	2382
11	INDIANA U-BLOOMINGTN	Stone, J F	MSFC	Mufson, S L	NAG 8-396	2383
11	INDIANA U-BLOOMINGTN	Dailey, C C	MSFC	Mufson, S L	NAS 8-33087	2387
11	INDIANA U-BLOOMINGTN	Brunk, W E	HQ-SL	Edmondson, F K	NAGW 98	2385
11	IOWA STATE UNIV	Black, D C	ARC	Russell, J L	NAG 2-113	2441
11	IOWA STATE UNIV	Bogges, A	GSFC	Beavers, W I	NAG 5-172	2443
11	IOWA STATE UNIV	Jones, T B	MSFC	Lamb, R C	NAG 8-338	2444
11	IOWA STATE UNIV	Swearingen, J C	MSFC	Lamb, R C	NAG 8-360	2445
11	IOWA STATE UNIV	Jones, J B, Jr	MSFC	Lamb, R C	NAS 8-33334	2446
11	JOHNS HOPKINS UNIV	Young, E W	GSFC	Davidson, A F	NAS 5-26057	2603
11	JOHNS HOPKINS UNIV	Young, E	GSFC	Davidson, A F	NAS 5-27000	2605
11	JOHNS HOPKINS UNIV	Guidotti, J	GSFC	Feldman, P D	NGR 21-001-001	2613
11	JOHNS HOPKINS UNIV	Bogges, A	GSFC	Moos, H W	NSG 5255	2620
11	JOHNS HOPKINS UNIV	Kupperian, J E	GSFC	Moos, H W	NSG 5310	2621
11	JOHNS HOPKINS UNIV	Bogges, A	GSFC	Moss, H W	NSG 5393	2622
11	JOHNS HOPKINS UNIV	O'dell, C R	MSFC	Fastie, W G	NAS 8-32903	2608
11	JOHNS HOPKINS UNIV	Weiler, E J	HQ-SC	Davidson, A F	NSG 7449	2624
11	LEHIGH UNIVERSITY	Bogges, A	GSFC	McCluskey, G E	NSG 5386	3850
11	LEHIGH UNIVERSITY	Swearingen, J C	MSFC	McCluskey, G E	NAG 8-355	3842
11	LA ST U&A&M COL-BRGE	Sofia, S	GSFC	Endal, A S	NAG 5-13	2566
11	LA ST U&A&M COL-BRGE	Bogges, A	GSFC	Drilling, J S	NAG 5-71	2567
11	LA ST U&A&M COL-BRGE	Bogges, A	GSFC	Bond, H E	NAG 5-197	2568
11	MASS INST OF TECH	Black, D C	ARC	Staelin, D H	NAG 2-50	2825
11	MASS INST OF TECH	Fimmel, R O	ARC	Pettingill, G H	NAS 2-9473	2870
11	MASS INST OF TECH	Fimmel, R O	ARC	Shapiro, I I	NAS 2-9483	2871
11	MASS INST OF TECH	Haughney, L C	ARC	Elliot, J L	NSG 2342	2922
11	MASS INST OF TECH	Bogges, A	GSFC	McClintock, J E	NAG 5-43	2845
11	MASS INST OF TECH	Kouns, C W	GSFC	Molnar, P	NAG 5-149	2852
11	MASS INST OF TECH	Bogges, A	GSFC	Kallman, T R	NAG 5-170	2853
11	MASS INST OF TECH	Bogges, A	GSFC	Cowie, L L	NAG 5-192	2854
11	MASS INST OF TECH	Corrigan, J P	GSFC	Clark, G W	NAS 5-24441	2875
11	MASS INST OF TECH	Mather, J C	GSFC	Weiss, R	NAS 5-24493	2876
11	MASS INST OF TECH	Gemmell, J D	GSFC	Bridge, H S	NAS 5-25790	2877
11	MASS INST OF TECH	Guidotti, J G	GSFC	Rappaport, S A	NGR 22-009-730	2909
11	MASS INST OF TECH	Stone, J F	MSFC	Bradt, H V	NAS 8-27972	2879
11	MASS INST OF TECH	Stone, J F	MSFC	Bohm-vitense, E	NAS 8-27975	2880
11	MASS INST OF TECH	Stone, J F	MSFC	Clark, G W	NAS 8-30752	2881
11	MASS INST OF TECH	Morgan, S H	MSFC	Burke, B F	NAS 8-34545	2886
11	MASS INST OF TECH	Kaluzienski, L J	HQ-SC	Ricker, G R	NAGW 14	2857
11	MASS INST OF TECH	Weiler, E J	HQ-SC	Cowie, L L	NAGW 208	2864
11	MASS INST OF TECH	Bogges, N W	HQ-SC	Weiss, R	NGR 22-009-526	2905
11	MASS INST OF TECH	Bogges, N W	HQ-SC	Kleinmann, S	NSG 7186	2939
11	MASS INST OF TECH	Bogges, N	HQ-SC	Weiss, R	NSG 7328	2941
11	MASS INST OF TECH	Holt, G S	HQ-SC	Ricker, G R	NSG 7339	2943
11	MASS INST OF TECH	Kaluzienski, L J	HQ-SC	Clark, G	NSG 7643	2948
11	MASS INST OF TECH	Brunk, W E	HQ-SL	Taff, L G	NAGW 232	2866
11	MASS INST OF TECH	Brunk, W E	HQ-SL	Pettingill, G H	NGR 22-009-672	2907
11	MASS INST OF TECH	Brunk, W E	HQ-SL	Elliot, J L	NSG 7526	2944
11	MASS INST OF TECH	Brunk, W E	HQ-SL	Shapiro, I I	NSG 7556	2945
11	MIDDLEBURY COLLEGE	Stone, J F	MSFC	Winkler, P F, Jr	NAG 8-389	4303

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11	MIDDLEBURY COLLEGE	Jones, J B , Jr	MSFC	Winkler, P F , Jr	NAS 8-33335	4305
11	MISSISSIPPI STATE U	Thomas, J H	MSFC	Ingels, F M	NAS 8-33570	3109
11	MORGAN STATE UNIV	Baker, G R	GSFC	Hammond, E C , Jr	NSG 5074	2629
11	MURRAY STATE U-KY	Scott, C D	JSC	Owen, D A	NAS 9-16254	2543
11	NEW MEX INST MINING	Caroff, L J	ARC	Eilek, J A	NCA 2-511101	3270
11	NEW MEX INST MINING	Hobbs, R W	GSFC	Moore, E P	NCA 5-71	3271
11	NEW MEX INST MINING	Brandt, J	GSFC	Moore, E P	NCA 5-81	3272
11	NEW MEX INST MINING	Jones, J B	MSFC	Gibson, D M	NAG 8-347	3266
11	NEW MEX INST MINING	Stone, J F	MSFC	Gibson, D M	NAG 8-394	3267
11	NEW MEX INST MINING	Jones, J B , Jr	MSFC	Gibson, D M	NAS 8-33341	3268
11	NEW MEX ST U-LAS CR	Gilman, D A	HQ-SC	Golden, R	NAGW 110	3273
11	NEW MEX ST U-LAS CR	Brunk, W E	HQ-SL	Beebe, R F	NGL 32-003-001	3283
11	NEW YORK UNIVERSITY	Boggess, A	GSFC	Glassgold, A E	NAG 5-73	3397
11	NEW YORK UNIVERSITY	Boggess, A	GSFC	Glassgold, A E	NAG 5-122	3398
11	NEW YORK UNIVERSITY	Boggess, A	GSFC	Huggins, P J	NSG 5411	3412
11	NEW YORK UNIVERSITY	Jones, J B	MSFC	Glassgold, A E	NAG 8-337	3399
11	NEW YORK UNIVERSITY	Jones, J B	MSFC	Huggins, P J	NAG 8-343	3400
11	NEW YORK UNIVERSITY	Swearingen, J C	MSFC	Glassgold, A E	NAG 8-358	3401
11	NEW YORK UNIVERSITY	Stone, J F	MSFC	Glassgold, A E	NAG 8-393	3402
11	NEW YORK UNIVERSITY	Boggess, N W	HQ-SC	Glassgold, A E	NAGW 194	3403
11	NORTHWESTERN UNIV	Guidotti, J G	GSFC	Ulmer, M P	NAG 5-181	2288
11	NORTHWESTERN UNIV	Jones, J B	MSFC	Ulmer, M P	NAG 8-326	2289
11	NORTHWESTERN UNIV	Stone, J F	MSFC	Ulmer, M P	NAG 8-367	2290
11	NORTHWESTERN UNIV	Stone, J F	MSFC	Ulmer, M P	NAG 8-368	2291
11	NORTHWESTERN UNIV	Stone, J F	MSFC	Taam, R E	NAG 8-415	2292
11	NORTHWESTERN UNIV	Stone, J F	MSFC	Ulmer, M P	NAG 8-416	2293
11	NORTHWESTERN UNIV	Jones, J B , Jr	MSFC	Ulmer, M P	NAS 8-33010	2294
11	NORTHWESTERN UNIV	Jones, J B , Jr	MSFC	Ulmer, M P	NAS 8-33354	2295
11	NORTHWESTERN UNIV	Weiler, E J	HQ-SC	Huang, S S	NGL 14-007-041	2298
11	OHIO STATE UNIV	Boggess, A	GSFC	Czyzak, S J	NAG 5-42	3663
11	OHIO STATE UNIV	Boggess, A	GSFC	Sletteback, A	NAG 5-52	3664
11	OHIO STATE UNIV	Wende, C	GSFC	Slettebak, A E	NSG 5299	3692
11	OHIO STATE UNIV	Boggess, A	GSFC	Wing, R F	NSG 5368	3693
11	PENN STATE U-UNIV PK	Boggess, A	GSFC	Wegner, G A	NAG 5-60	3864
11	PENN STATE U-UNIV PK	Guidotti, J G	GSFC	Garmire, G P	NAG 5-100	3866
11	PENN STATE U-UNIV PK	Boggess, A	GSFC	Auer, L H	NAG 5-201	3868
11	PENN STATE U-UNIV PK	Kaluzienski, L J	HQ-SC	Garmire, G	NAGW 108	3870
11	PRINCETON UNIVERSITY	Boggess, A	GSFC	York, D G	NAG 5-48	3218
11	PRINCETON UNIVERSITY	Gemmell, J	GSFC	Spitzer, L , Jr	NAS 5-23576	3227
11	PRINCETON UNIVERSITY	Mather, J C	GSFC	Wilkinson, D T	NAS 5-24486	3228
11	PRINCETON UNIVERSITY	Hobbs, R	GSFC	Groth, E J	NAS 5-25084	3229
11	PRINCETON UNIVERSITY	Cyphers, H	GSFC	Jenkins, E B	NAS 5-26268	3231
11	PRINCETON UNIVERSITY	Boggess, A	GSFC	Jenkins, E B	NSG 5248	3245
11	PRINCETON UNIVERSITY	Boggess, A	GSFC	York, D G	NSG 5382	3247
11	PRINCETON UNIVERSITY	Corrigan, J P	GSFC	Turners, E L	NSG 5415	3248
11	PRINCETON UNIVERSITY	Jones, J B	MSFC	Cowie, L L	NAG 8-306	3219
11	PRINCETON UNIVERSITY	Swearingen, J C	MSFC	Bahcall, N A	NAG 8-363	3220
11	PRINCETON UNIVERSITY	Stone, J F	MSFC	Behcall, N A	NAG 8-420	3221
11	PRINCETON UNIVERSITY	Jones, J B , Jr	MSFC	Cowie, L L	NAS 8-33345	3233
11	PRINCETON UNIVERSITY	Weiler, E J	HQ-SC	York, D	NAGW 10	3222
11	PRINCETON UNIVERSITY	Weiler, E J	HQ-SC	Spitzer, L , Jr	NGL 31-001-007	3235
11	PRINCETON UNIVERSITY	Weiler, E J	HQ-SC	Bahcall, N A	NSG 7256	3249
11	PRINCETON UNIVERSITY	Boggess, N W	HQ-SC	Wilkinson, D	NSG 7302	3251
11	PRINCETON UNIVERSITY	Weiler, E J	HQ-SC	Jenkins, E B	NSG 7618	3254
11	RICE UNIVERSITY	Boggess, A	GSFC	Dufour, R J	NSG 5364	4072
11	RICE UNIVERSITY	Parker, R A	JSC	Dufour, R J	NAS 9-15940	4065
11	RICE UNIVERSITY	Jones, J B	MSFC	Haymes, R C	NAS 8-33361	4061
11	RUTGERS U-N BRUNSWK	Boggess, A	GSFC	Matilsky, T	NAG 5-70	3255

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11	RUTGERS U-N BRUNSWK	Jones, J B	MSFC	Matilsky, T	NAG 8-309	3256
11	RUTGERS U-N BRUNSWK	Jones, J B	MSFC	Cheng, A F	NAG 8-328	3257
11	SAN DIEGO STATE UNIV	Swearingen, J C	MSFC	Young, A	NAG 8-356	1337
11	SAN FRAN STATE UNIV	Stone, J F	MSFC	Lea, S	NAG 8-385	1340
11	SAN FRAN STATE UNIV	Stone, J F	MSFC	Lea, S M	NAG 8-418	1341
11	SONOMA STATE UNIV	Corrigan, J P	GSFC	Spear, G G	NAG 5-115	1383
11	STANFORD UNIVERSITY	Corrigan, J P	GSFC	Helliwell, R A	NAG 5-120	1403
11	STANFORD UNIVERSITY	Bogges, A	GSFC	Walker, A B	NAG 5-202	1405
11	STANFORD UNIVERSITY	Bullock, G	GSFC	Helliwell, R A	NAS 5-25688	1418
11	STANFORD UNIVERSITY	Corrigan, J P	GSFC	Helliwell, R A	NAS 5-25744	1419
11	STANFORD UNIVERSITY	Campbell, C F	GSFC	Hofstadter, R	NAS 5-26020	1420
11	STANFORD UNIVERSITY	Campbell, C	GSFC	Hofstadter, R	NAS 5-26682	1421
11	STANFORD UNIVERSITY	Bogges, A	GSFC	Walker, A B	NSG 5417	1500
11	STANFORD UNIVERSITY	Jones, J B	MSFC	Walker, A B	NAG 8-325	1406
11	STANFORD UNIVERSITY	Carter, C H	HQ-LC	Walker, Jr, A B	NGT 05-020-803	1492
11	STANFORD UNIVERSITY	Kaluzienski, L J	HQ-SC	Hofstadter, R	NGR 05-020-452	1482
11	STANFORD UNIVERSITY	Chipman, E	HQ-SC	Wilcox, J M	NGR 05-020-559	1484
11	STANFORD UNIVERSITY	Kaluzienski, L J	HQ-SC	Sturrock, P A	NGR 05-020-668	1487
11	STANFORD UNIVERSITY	Chipman, E	HQ-SC	Petrosian, J	NSG 7092	1501
11	STANFORD UNIVERSITY	Weiler, E J	HQ-SC	Will, C M	NSG 7204	1502
11	STANFORD UNIVERSITY	Kaluzienski, L J	HQ-SC	Walker, A B, Jr	NSG 7476	1504
11	STANFORD UNIVERSITY	Brunk, W E	HQ-SL	Tyler, G L	NSG 7395	1503
11	STANFORD UNIVERSITY	Brunk, W E	HQ-SL	Tyler, G L	NSG 7561	1507
11	STATE UNIV NY-ALBANY	Weiler, E J	HQ-SC	Weinberg, J L	NSG 7241	3464
11	ST U NY COL-GENESE	Corrigan, J. P	GSFC	Meisel, D D	NAG 5-113	3505
11	STATE U NY-STONY BRK	Haughney, L C	ARC	Knacke, R	NAG 2-56	3471
11	STATE U NY-STONY BRK	Bogges, A	GSFC	Caldwell, J	NSG 5250	3498
11	STATE U NY-STONY BRK	Jones, J B	MSFC	Simon, M	NAG 8-332	3475
11	STATE U NY-STONY BRK	Stone, J F	MSFC	Simon, M	NAG 8-388	3476
11	STATE U NY-STONY BRK	O'dell, C R	MSFC	Caldwell, J J	NAS 8-32904	3485
11	STATE U NY-STONY BRK	Ilman, D G	HQ-SC	Forman, M A	NGR 33-015-180	3494
11	STATE U NY-STONY BRK	Murphy, R E.	HQ-SL	Owen, T	NGR 33-015-141	3492
11	STATE U NY-STONY BRK	Brunk, W E	HQ-SL	Knacke, R F	NSG 7286	3500
11	STATE U NY-STONY BRK	Brunk, W E	HQ-SL	Caldwell, J J	NSG 7320	3501
11	UNIV ALA-HUNTSVILLE	Corrigan, J P	GSFC	Horwitz, J L	NSG 5413	1077
11	UNIV ALA-HUNTSVILLE	Weisskopf, M C	MSFC	Gregory, J C	NAS 8-33977	1059
11	UNIV ALA-HUNTSVILLE	Brunk, W E	HQ-SL	Smith, B A	NAGW 247	1033
11	UNIV ALA-UNIVERSITY	Carter, C H	HQ-LC	Desmet, D J	NGT 01-002-800	1081
11	UNIV ALASKA-FAIRBNKS	Corrigan, J P.	GSFC	Lee, L C	NSG 5409	1090
11	UNIV OF ARIZONA	Black, D C	ARC	Serkowski, K M	NAG 2-52	1125
11	UNIV OF ARIZONA	Haughney, L C	ARC	Thronson, H	NAG 2-55	1126
11	UNIV OF ARIZONA	Hall, C F	ARC	Gehrels, A M	NAS 2-6265	1160
11	UNIV OF ARIZONA	Haughney, L C	ARC	Larson, H P	NAS 2-10890	1162
11	UNIV OF ARIZONA	Erickson, E F	ARC	Thompson, R I	NCA 2-40101	1183
11	UNIV OF ARIZONA	Haughney, L C	ARC	Larson, H P	NGR 03-002-332	1192
11	UNIV OF ARIZONA	Gull, T R.	GSFC	Crane, E R	NAG 5-34	1131
11	UNIV OF ARIZONA	Bogges, A	GSFC	Green, R F	NAG 5-38	1132
11	UNIV OF ARIZONA	Bogges, A	GSFC	Williams, R E	NAG 5-56	1133
11	UNIV OF ARIZONA	Bogges, A	GSFC	Giampapa, M S	NAG 5-57	1134
11	UNIV OF ARIZONA	Donn, B	GSFC	Larson, S	NAG 5-86	1136
11	UNIV OF ARIZONA	Eirand, A M	GSFC	Smith, B A	NAS 5-24308	1164
11	UNIV OF ARIZONA	Liberatore, F J	GSFC	Weymann, R J	NAS 5-25733	1166
11	UNIV OF ARIZONA	Kalet, M W	GSFC	Beckers, J M	NAS 5-25955	1167
11	UNIV OF ARIZONA	Arens, J F	GSFC	Low, F J	NAS 5-26575	1168
11	UNIV OF ARIZONA	Bogges, A	GSFC	Imhoff, C L	NSG 5235	1198
11	UNIV OF ARIZONA	Bogges, A	GSFC	Tomasko, M G	NSG 5249	1199
11	UNIV OF ARIZONA	Jones, J B	MSFC	Strittmatter, P A	NAG 8-321	1139
11	UNIV OF ARIZONA	Stone, J F	MSFC	Stoeke, J T	NAG 8-370	1140



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
11	UNIV OF ARIZONA	Stone, J F	MSFC	Green, R	NAG 8-380	1141
11	UNIV OF ARIZONA	Stone, J F	MSFC	Scott, J	NAG 8-387	1142
11	UNIV OF ARIZONA	Stone, J F	MSFC	Tapia, S	NAG 8-402	1143
11	UNIV OF ARIZONA	Stone, J F	MSFC	Liebert, J W	NAG 8-403	1144
11	UNIV OF ARIZONA	Stone, J F	MSFC	Moore, R L	NAG 8-408	1145
11	UNIV OF ARIZONA	Parnell, T A	MSFC	Benton, E V	NAS 8-31192	1169
11	UNIV OF ARIZONA	Fishman, G J	MSFC	Larson, H P	NAS 8-33732	1174
11	UNIV OF ARIZONA	Mayr, H G	HQ-SC	Scott, J S	NAGW 124	1149
11	UNIV OF ARIZONA	Boggess, N W	HQ-SC	Low, F J	NGR 03-002-269	1191
11	UNIV OF ARIZONA	Boggess, N W	HQ-SC	Hoffman, W	NGR 03-002-371	1194
11	UNIV OF ARIZONA	Gilman, D A	HQ-SC	Jokipii, J R	NSG 7101	1205
11	UNIV OF ARIZONA	Boggess, N W	HQ-SC	Craine, E R	NSG 7368	1210
11	UNIV OF ARIZONA	Weiler, E J	HQ-SC	Tapia, S F	NSG 7574	1219
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Hege, E K	NAGW 224	1156
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Gehrels, A M	NASW 3262	1177
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Wilkening, L L	NASW 3413	1178
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Gehrels, T	NASW 3454	1179
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Smith, J C	NGL 03-002-002	1184
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Gehrels, T	NGL 03-002-081	1186
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Gehrels, A M	NGR 03-002-219	1190
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Hubbard, W B	NSG 7045	1203
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Fink, U W	NSG 7070	1204
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Rieke, G H	NSG 7114	1206
11	UNIV OF ARIZONA	Murphy, R E	HQ-SL	Hsieh, K C	NSG 7374	1211
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Zellner, B H	NSG 7502	1215
11	UNIV OF ARIZONA	Brunk, W E	HQ-SL	Brown, R A	NSG 7634	1223
11	UNIV OF ARIZONA	Taylor, T	HQ-SP	Angel, J R	NAGW 121	1148
11	UNIV CALIF-BERKELEY	Cuzzi, J N	ARC	Shu, F H	NCA 2-50102	1564
11	UNIV CALIF-BERKELEY	Erickson, E F	ARC	Heiles, C E	NCC 2-142	1573
11	UNIV CALIF-BERKELEY	Haughney, L C	ARC	Townes, C H	NGR 05-003-511	1587
11	UNIV CALIF-BERKELEY	Corrigan, J P	GSFC	Bowyer, C S	NAG 5-27	1516
11	UNIV CALIF-BERKELEY	Corrigan, J P	GSFC	Bowyer, C S	NAG 5-28	1517
11	UNIV CALIF-BERKELEY	Boggess, A	GSFC	Kuhl, L	NAG 5-55	1518
11	UNIV CALIF-BERKELEY	Boggess, A	GSFC	Bowyer, C S	NAG 5-69	1519
11	UNIV CALIF-BERKELEY	Boggess, A	GSFC	Chu, Y H	NAG 5-103	1521
11	UNIV CALIF-BERKELEY	Corrigan, J P	GSFC	Bowyer, C S	NAG 5-117	1522
11	UNIV CALIF-BERKELEY	Boggess, A	GSFC	Weaver, H F	NAG 5-168	1524
11	UNIV CALIF-BERKELEY	Willis, S E	GSFC	Bowyer, C S	NAS 5-24445	1549
11	UNIV CALIF-BERKELEY	Mather, J C	GSFC	Smoot, G F	NAS 5-25007	1550
11	UNIV CALIF-BERKELEY	Hobbs, R	GSFC	King, I	NAS 5-25070	1551
11	UNIV CALIF-BERKELEY	Corrigan, J P	GSFC	Mozer, F S	NAS 5-25770	1552
11	UNIV CALIF-BERKELEY	Porreca, G	GSFC	Anderson, D A	NAS 5-25892	1553
11	UNIV CALIF-BERKELEY	Corrigan, J P	GSFC	Anderson, K A	NAS 5-25980	1554
11	UNIV CALIF-BERKELEY	Guidotti, J G	GSFC	Bowyer, C S	NGR 05-003-450	1583
11	UNIV CALIF-BERKELEY	Jones, J B	LARC	Pnce, P B	NAS 1-16268	1542
11	UNIV CALIF-BERKELEY	Jones, J B	MSFC	Bowyer, C S	NAG 8-301	1526
11	UNIV CALIF-BERKELEY	Jones, J B	MSFC	Bowyer, C S	NAG 8-303	1527
11	UNIV CALIF-BERKELEY	Jones, J B	MSFC	Silk, J I	NAG 8-311	1528
11	UNIV CALIF-BERKELEY	Jones, J B	MSFC	Silk, J I	NAG 8-320	1529
11	UNIV CALIF-BERKELEY	Jones, J B	MSFC	Spinrad, H	NAG 8-333	1530
11	UNIV CALIF-BERKELEY	Jones, J B	MSFC	Kuhl, L V	NAG 8-336	1531
11	UNIV CALIF-BERKELEY	Swearingen, J C	MSFC	Silk, J I	NAG 8-351	1532
11	UNIV CALIF-BERKELEY	Stone, J F	MSFC	Bowyer, C S	NAG 8-373	1533
11	UNIV CALIF-BERKELEY	Stone, J F	MSFC	Kuhl, L	NAG 8-381	1534
11	UNIV CALIF-BERKELEY	Stone, J F	MSFC	Kuhl, L	NAG 8-397	1535
11	UNIV CALIF-BERKELEY	Marmann, R	MSFC	Bowyer, C S	NAS 8-32577	1555
11	UNIV CALIF-BERKELEY	Jones, J B, Jr	MSFC	Bowyer, C S	NAS 8-33349	1556
11	UNIV CALIF-BERKELEY	Barnes, J B	MSFC	Anderson, K A	NAS 8-33357	1557

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## APPENDIX - CROSS INDEX BY FIELD OF SCIENCE AND ENGINEERING

FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
11	UNIV CALIF-BERKELEY	Kaluzienski, L J	HQ-SC	Lampton, M L	NAGW 44	1537
11	UNIV CALIF-BERKELEY	Boggess, N. W	HQ-SC	Smoot, G F	NAGW 66	1538
11	UNIV CALIF-BERKELEY	Boggess, N W	HQ-SC	Townes, C H	NGL 05-003-272	1576
11	UNIV CALIF-BERKELEY	Gilman, D A	HQ-SC	Price, P B	NGR 05-003-376	1582
11	UNIV CALIF-BERKELEY	Kaluzienski, L J	HQ-SC	Heckman, H H	NGR 05-003-513	1588
11	UNIV CALIF-BERKELEY	Kaluzienski, L J	HQ-SC	Buffington, A	NGR 05-003-553	1589
11	UNIV CALIF-BERKELEY	Weiler, E J	HQ-SC	Silk, J I	NGR 05-003-578	1590
11	UNIV CALIF-BERKELEY	Boggess, N W	HQ-SC	Richards, P L	NSG 7205	1597
11	UNIV CALIF-BERKELEY	Holt, S S	HQ-SC	Lin, R P	NSG 7592	1604
11	UNIV CALIF-BERKELEY	Brunk, W E	HQ-SL	Townes, C H	NGR 05-003-452	1585
11	UNIV CALIF-BERKELEY	Brunk, W E	HQ-SL	Welch, W J	NSG 7152	1596
11	UNIV CALIF-IRVINE	Kaluzienski, L J	HQ-SC	Tucker, W H	NAGW 109	1618
11	UNIV CALIF-L ANGELES	Fimmel, R O	ARC	Schubert, G	NAS 2-9131	1643
11	UNIV CALIF-L ANGELES	Corrigan, J P	GSFC	Plavec, M J	NAG 5-112	1630
11	UNIV CALIF-L ANGELES	Corrigan, J P	GSFC	Jura, M A	NAG 5-116	1631
11	UNIV CALIF-L ANGELES	Boggess, A	GSFC	Grandi, S A	NAG 5-210	1633
11	UNIV CALIF-L ANGELES	Liberatore, F J	GSFC	Jura, M A	NAS 5-25657	1646
11	UNIV CALIF-L ANGELES	Corrigan, J P	GSFC	Russell, C T	NAS 5-25772	1647
11	UNIV CALIF-L ANGELES	Kupperian, J E, Jr	GSFC	Jura, M A	NSG 5169	1676
11	UNIV CALIF-L ANGELES	Boggess, A	GSFC	Plavec, M	NSG 5272	1679
11	UNIV CALIF-L ANGELES	Boggess, A	GSFC	Aller, L H	NSG 5358	1681
11	UNIV CALIF-L ANGELES	Boggess, A	GSFC	Jura, M	NSG 5377	1682
11	UNIV CALIF-L ANGELES	Jones, J B, Jr	MSFC	Margon, B H	NAS 8-33353	1649
11	UNIV CALIF-L ANGELES	Weiler, E J	HQ-SC	Jura, M	NAGW 80	1637
11	UNIV CALIF-L ANGELES	Kaluzienski, L J	HQ-SC	Kennel, C F	NSG 7341	1688
11	UNIV CALIF-L ANGELES	Weiler, E J	HQ-SC	Jura, M	NSG 7621	1694
11	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Nicol, M F	NAGW 104	1639
11	UNIV CALIF-RIVERSIDE	Gilman, D A	HQ-SC	White, R S	NGR 05-008-022	1696
11	UNIV CALIF-SAN DIEGO	Fimmel, R O	ARC	Fillius, R W	NAS 2-6552	1717
11	UNIV CALIF-SAN DIEGO	Haughney, L C	ARC	Jones, B	NGR 05-005-055	1739
11	UNIV CALIF-SAN DIEGO	Boggess, A	GSFC	Worrall, D M	NAG 5-63	1700
11	UNIV CALIF-SAN DIEGO	Boggess, A	GSFC	Smith, H E	NAG 5-194	1702
11	UNIV CALIF-SAN DIEGO	Boggess, A	GSFC	Puetter, R C	NAG 5-195	1703
11	UNIV CALIF-SAN DIEGO	White, R A	GSFC	Harms, R J	NAS 5-24463	1718
11	UNIV CALIF-SAN DIEGO	Shannon, J L	GSFC	Beaver, E A	NAS 5-25054	1719
11	UNIV CALIF-SAN DIEGO	Davis, M A	GSFC	Patterson, L E	NAS 5-25448	1720
11	UNIV CALIF-SAN DIEGO	Jones, J B	MSFC	Marscher, A P	NAG 8-315	1705
11	UNIV CALIF-SAN DIEGO	Jones, J. B	MSFC	Burbidge, E M	NAG 8-340	1706
11	UNIV CALIF-SAN DIEGO	Stone, J F	MSFC	Worrall, D M	NAG 8-377	1707
11	UNIV CALIF-SAN DIEGO	Stone, J. F	MSFC	Peterson, L E	NAS 8-27974	1723
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L J	HQ-SC	Felten, J E	NAGW 12	1708
11	UNIV CALIF-SAN DIEGO	Weiler, E J	HQ-SC	Canfield, R C	NAGW 30	1710
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J	HQ-SC	Gould, R J	NGL 05-005-004	1732
11	UNIV CALIF-SAN DIEGO	Weiler, E J	HQ-SC	McIlwain, C E	NGR 05-009-188	1741
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J	HQ-SC	Rothschild, R E	NSG 7294	1753
11	UNIV CALIF-SAN DIEGO	Weiler, E J	HQ-SC	Burbidge, E M	NSG 7377	1754
11	UNIV CALIF-SAN DIEGO	Kaluzienski, L. J	HQ-SC	Lingenfelter, R E	NSG 7541	1756
11	UNIV CALIF-SAN DIEGO	Murphy, R E	HQ-SL	Alfven, H	NGR 05-009-110	1740
11	UNIV CALIF-S CRUZ	Black, D C	ARC	Bodenheimer, P	NCA 2-690001	1808
11	UNIV CALIF-S CRUZ	Witteborn, F C	ARC	Rank, D M	NCA 2-690101	1809
11	UNIV CALIF-S CRUZ	Black, D C	ARC	Bodenheimer, P	NCA 2-690102	1810
11	UNIV CALIF-S CRUZ	Boggess, A	GSFC	Wampler, E J	NAG 5-175	1804
11	UNIV CALIF-S CRUZ	Boggess, A	GSFC	Herbig, G H	NSG 5361	1812
11	UNIV CALIF-S CRUZ	Swearingen, J. C	MSFC	Miller, J S	NAG 8-352	1805
11	UNIV CALIF-S CRUZ	Stone, J F	MSFC	Vogt, S S	NAG 8-407	1806
11	UNIV CALIF-S CRUZ	Kaluzienski, L J	HQ-SC	Faulkner, J	NAGW 195	1807
11	UNIV CALIF-S CRUZ	Boggess, N W	HQ-SC	Rank, D M	NGR 05-061-015	1811
11	UNIV CALIF-S CRUZ	Boggess, N W.	HQ-SC	Miller, J S	NSG 7503	1813

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
11	UNIV OF CHICAGO	Fimmel, R O	ARC	Simpson, J A	NAS 2-6551	2308
11	UNIV OF CHICAGO	Smith, B F	ARC	Miller, R H	NCA 2-108101	2317
11	UNIV OF CHICAGO	Smith, B F	ARC	Miller, R H	NCA 2-108902	2318
11	UNIV OF CHICAGO	Haughney, L C	ARC	Harper, D A , Jr	NGR 14-001-227	2331
11	UNIV OF CHICAGO	Haughney, L C	ARC	Hildebrand, R H	NSG 2057	2333
11	UNIV OF CHICAGO	Boggess, A	GSFC	Frisch, P C	NAG 5-53	2303
11	UNIV OF CHICAGO	Corrigan, J P	GSFC	Frisch, P C	NAG 5-125	2304
11	UNIV OF CHICAGO	Gemmell, J	GSFC	Simpson, J A	NAS 5-25731	2311
11	UNIV OF CHICAGO	Ormes, J F	GSFC	Muller, D	NAS 5-26076	2312
11	UNIV OF CHICAGO	Sing, M	GSFC	Meyer, P	NAS 5-26099	2313
11	UNIV OF CHICAGO	Jones, J B , Jr	MSFC	Meyer, P	NAS 8-33350	2316
11	UNIV OF CHICAGO	Kaluzienski, L J	HQ-SC	Arnett, W D	NAGW 123	2307
11	UNIV OF CHICAGO	Gilman, D A	HQ-SC	Parker, E N	NGL 14-001-001	2319
11	UNIV OF CHICAGO	Kaluzienski, L J	HQ-SC	Meyer, P	NGL 14-001-005	2320
11	UNIV OF CHICAGO	Holt, S S	HQ-SC	Simpson, J A	NGL 14-001-006	2321
11	UNIV OF CHICAGO	Weiler, E J	HQ-SC	Hobbs, L M	NGR 14-001-147	2329
11	UNIV OF CHICAGO	Brunk, W E	HQ-SL	Hildebrand, R H	NAGW 4	2306
11	UNIV COLORADO-BOLDR	Corrigan, J P	GSFC	Snow, T P	NAG 5-15	1912
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Conti, P S	NAG 5-78	1915
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Linsky, J L	NAG 5-82	1916
11	UNIV COLORADO-BOLDR	Guidotti, J G	GSFC	Cash, W C	NAG 5-96	1917
11	UNIV COLORADO-BOLDR	Corrigan, J P	GSFC	Shull, J M	NAG 5-111	1918
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Shull, J M	NAG 5-193	1920
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Ayres, T R	NAG 5-199	1921
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Conti, P S	NAS 5-22833	1938
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Linsky, J L	NAS 5-23274	1939
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Snow, T P	NAS 5-26409	1945
11	UNIV COLORADO-BOLDR	Boggess, A	GSFC	Snow, T P , Jr	NSG 5300	1958
11	UNIV COLORADO-BOLDR	Guidotti, J G	GSFC	Snow, T P	NSG 5303	1959
11	UNIV COLORADO-BOLDR	Wende, C D	GSFC	Snow, P , Jr	NSG 5355	1961
11	UNIV COLORADO-BOLDR	Manning, H S	MSFC	Snow, T P	NAG 8-300	1922
11	UNIV COLORADO-BOLDR	Jones, J B , Jr	MSFC	Ayres, T R	NAG 8-316	1923
11	UNIV COLORADO-BOLDR	Jones, J B	MSFC	Snow, T P	NAG 8-327	1924
11	UNIV COLORADO-BOLDR	Jones, J B	MSFC	Linsky, J L	NAG 8-334	1925
11	UNIV COLORADO-BOLDR	Swearingen, J C	MSFC	Cash, W C	NAG 8-353	1926
11	UNIV COLORADO-BOLDR	Stone, J F	MSFC	Simon, T S	NAG 8-382	1927
11	UNIV COLORADO-BOLDR	Stone, J F	MSFC	Cash, W C , Jr	NAG 8-384	1928
11	UNIV COLORADO-BOLDR	Stone, J F	MSFC	Ayres, T R	NAG 8-398	1929
11	UNIV COLORADO-BOLDR	Stone, J F	MSFC	Linsky, J L	NAG 8-400	1930
11	UNIV COLORADO-BOLDR	Jones, J B , Jr	MSFC	McCray, R	NAS 8-33338	1948
11	UNIV COLORADO-BOLDR	Jones, J B , Jr	MSFC	Ayres, T A	NAS 8-33342	1949
11	UNIV COLORADO-BOLDR	Weiler, E J	HQ-SC	Cash, W C	NAGW 203	1935
11	UNIV COLORADO-BOLDR	Kaluzienski, L	HQ-SC	McCray, R	NSG 7128	1963
11	UNIV COLORADO-BOLDR	Weiler, E J	HQ-SC	Snow, T P	NSG 7626	1972
11	UNIV COLORADO-BOLDR	Weiler, E J	HQ-SC	Ashby, N	NSG 7637	1973
11	UNIV COLORADO-DENVER	Boggess, A	GSFC	Lane, A L	NSG 5394	1974
11	UNIV OF DELAWARE	Stone, J F	MSFC	Shipman, H L	NAG 8-390	2020
11	UNIV OF DENVER	Goldberg, R A	GSFC	Barcus, J R	NAS 5-26627	1983
11	UNIV OF DENVER	Boggess, A	GSFC	Lesh, J R	NSG 5367	1990
11	UNIV OF FLORIDA	Black, D C	ARC	Eichhorn, H K	NAG 2-46	2129
11	UNIV OF FLORIDA	Fimmel, R O	ARC	Weinberg, J L	NAS 2-11007	2135
11	UNIV OF FLORIDA	Corrigan, J P	GSFC	Wood, F B	NAG 5-110	2130
11	UNIV OF FLORIDA	Erband, A M	GSFC	Weinberg, J	NAS 5-26383	2137
11	UNIV OF FLORIDA	Brunk, W E	HQ-SL	Carr, T D	NAGW 196	2132
11	UNIV OF HAWAII-MANOA	Haughney, L C	ARC	Becklin, E	NAG 2-59	2242
11	UNIV OF HAWAII-MANOA	Boggess, A	GSFC	Simon, T	NAG 5-146	2243
11	UNIV OF HAWAII-MANOA	Adelman, A	GSFC	Jefferies, J T	NAS 5-25181	2255
11	UNIV OF HAWAII-MANOA	Stone, J F	MSFC	Simon, T	NAG 8-419	2244

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
11	UNIV OF HAWAII-MANOA	Chipman, E	HQ-SC	Jefferies, J T	NGL 12-001-011	2261
11	UNIV OF HAWAII-MANOA	Brunk, W E	HQ-SL	Cruikshank, D P	NAGW 61	2247
11	UNIV OF HAWAII-MANOA	Brunk, W E	HQ-SL	Cruikshank, D	NAGW 65	2248
11	UNIV OF HAWAII-MANOA	Weir, J F	HQ-SL	Jefferies, J T	NASW 2801	2258
11	UNIV OF HAWAII-MANOA	Brunk, W E	HQ-SL	Jefferies, J T	NASW 3159	2259
11	UNIV OF HAWAII-MANOA	Brunk, W E	HQ-SL	Pilcher, C B	NASW 3460	2260
11	UNIV OF HAWAII-MANOA	Brunk, W E	HQ-SL	Jefferies, J T	NGL 12-001-057	2262
11	UNIV OF HAWAII-MANOA	Brunk, W E	HQ-SL	McCord, T B	NSG 7323	2268
11	UNIV HOUSTON-CL LAKE	Fenner, R G	JSC	Dickerson, E T	NAS 9-16422	4167
11	UNIV ILLINOIS-URBANA	Gull, T R	GSFC	Dickel, J R	NAG 5-84	2350
11	UNIV ILLINOIS-URBANA	Bogges, A	GSFC	Lamb, S A	NAG 5-85	2351
11	UNIV ILLINOIS-URBANA	Bogges, A	GSFC	Kaler, J B	NAG 5-171	2353
11	UNIV ILLINOIS-URBANA	Donn, B D	GSFC	Snyder, L E	NSG 5278	2371
11	UNIV ILLINOIS-URBANA	Kupperian, J E, Jr	GSFC	Crutcher, R M	NSG 5294	2372
11	UNIV ILLINOIS-URBANA	Jones, J B	MSFC	Lamb, D Q	NAG 8-310	2354
11	UNIV ILLINOIS-URBANA	Jones, J B	MSFC	Dickel, J R	NAG 8-317	2355
11	UNIV ILLINOIS-URBANA	Stone, J F	MSFC	Dickel, J D	NAG 8-409	2356
11	UNIV ILLINOIS-URBANA	Kaluzienski, L	HQ-SC	Lamb, D Q	NSG 7653	2376
11	UNIV ILLINOIS-URBANA	Brunk, W E	HQ-SL	Dickel, J R	NGR 14-005-176	2363
11	UNIV OF IOWA	Fimmel, R O	ARC	Van Allen, J A	NAS 2-6553	2467
11	UNIV OF IOWA	Corngan, J P	GSFC	Baumback, M M	NAG 5-118	2464
11	UNIV OF IOWA	Corngan, J P	GSFC	Gurnett, D A	NAS 5-11279	2468
11	UNIV OF IOWA	Stone, R G	GSFC	Gurnett, D A	NAS 5-25999	2476
11	UNIV OF IOWA	Corngan, J P	GSFC	Gurnett, D A	NAS 5-26125	2477
11	UNIV MARYLAND-BALT	Roman, N G	HQ-SC	Misner, C W	NGR 21-002-010	2631
11	UNIV MARYLAND-COL PK	Bogges, A	GSFC	Wilson, A S	NAG 5-54	2641
11	UNIV MARYLAND-COL PK	Bogges, A	GSFC	Ahearn, M F	NAG 5-74	2642
11	UNIV MARYLAND-COL PK	Ogilvie, K W	GSFC	Coplan, M A	NAS 5-25472	2665
11	UNIV MARYLAND-COL PK	Corngan, J P	GSFC	Glorckler, G	NAS 5-25735	2667
11	UNIV MARYLAND-COL PK	Ormes, J F	GSFC	Yodh, G B	NAS 5-26098	2669
11	UNIV MARYLAND-COL PK	Baurer, S	GSFC	Ponnamperuma, C	NAS 5-26294	2670
11	UNIV MARYLAND-COL PK	Hobbs, R W	GSFC	Trasco, J D	NCC 5-9	2690
11	UNIV MARYLAND-COL PK	Ramaty, R	GSFC	Holmgren, H D	NSG 5298	2721
11	UNIV MARYLAND-COL PK	Bogges, A	GSFC	Harrington, J P	NSG 5390	2725
11	UNIV MARYLAND-COL PK	Bogges, A	GSFC	Bell, R A	NSG 5399	2726
11	UNIV MARYLAND-COL PK	Corngan, J P	GSFC	Wu, C S	NSG 5408	2728
11	UNIV MARYLAND-COL PK	Pearl, J C	GSFC	Khanna, R K	NSG 5424	2730
11	UNIV MARYLAND-COL PK	Jones, J B	MSFC	Wilson, A S	NAG 8-307	2650
11	UNIV MARYLAND-COL PK	Jones, J B	MSFC	Wilson, A S	NAG 8-329	2651
11	UNIV MARYLAND-COL PK	Swearingen, J C	MSFC	Wilson, A S	NAG 8-349	2652
11	UNIV MARYLAND-COL PK	Stone, J F	MSFC	Erickson, W C	NAG 8-369	2653
11	UNIV MARYLAND-COL PK	Stone, J F	MSFC	Matthews, D L	NAG 8-379	2654
11	UNIV MARYLAND-COL PK	Jones, J B, Jr	MSFC	Scott, J S	NAS 8-33329	2679
11	UNIV MARYLAND-COL PK	Jones, J B, Jr	MSFC	Erickson, W C	NAS 8-33346	2680
11	UNIV MARYLAND-COL PK	Jones, J B, Jr	MSFC	Wilson, A S	NAS 8-33358	2681
11	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Rose, W	NGT 21-002-801	2704
11	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Wentzel, D G	NGT 21-002-802	2705
11	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Gloeckler, G	NGT 21-002-804	2707
11	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Sucher, J	NGT 21-002-806	2709
11	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Kerr, F J	NGT 21-002-808	2711
11	UNIV MARYLAND-COL PK	Gilman, D A	HQ-SC	Earl, J A	NGR 21-002-066	2693
11	UNIV MARYLAND-COL PK	Bogges, N W	HQ-SC	Griem, H R	NGR 21-002-073	2694
11	UNIV MARYLAND-COL PK	Kaluzienski, L J	HQ-SC	Gloeckler, G	NGR 21-002-224	2697
11	UNIV MARYLAND-COL PK	Kaluzienski, L J	HQ-SC	Scott, J S	NSG 7555	2739
11	UNIV MARYLAND-COL PK	Brunk, W E	HQ-SL	A'hearn, M F	NSG 7322	2734
11	UNIV OF MASS-AMHERST	Fimmel, R O	ARC	McGill, G E	NAS 2-9129	2956
11	UNIV OF MASS-AMHERST	Eiband, A M	GSFC	Yngvesson, K S	NAS 5-26151	2957
11	UNIV OF MASS-AMHERST	Brunk, W E	HQ-SL	Irvine, W M	NGL 22-010-023	2960

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11	UNIV MICH-ANN ARBOR	Fimmel, R D	ARC	Donahue, T M	NAS 2-9126	3013
11	UNIV MICH-ANN ARBOR	Fimmel, R O	ARC	Nagy, A F	NAS 2-9130	3014
11	UNIV MICH-ANN ARBOR	Corrigan, J P	GSFC	Atreya, S K	NAG 5-109	2998
11	UNIV MICH-ANN ARBOR	Michalitsianos, A G	GSFC	Kirshner, R P	NAG 5-183	3000
11	UNIV MICH-ANN ARBOR	Jones, J B	MSFC	Patterson, J	NAG 8-318	3001
11	UNIV MICH-ANN ARBOR	Jones, J B	MSFC	Kirshner, R P	NAG 8-341	3002
11	UNIV MICH-ANN ARBOR	Stone, J F	MSFC	Richstone, D	NAG 8-354	3003
11	UNIV MICH-ANN ARBOR	Stone, J F	MSFC	Cowley, A P	NAG 8-383	3004
11	UNIV MICH-ANN ARBOR	Stone, J F	MSFC	Hegy, D J	NAG 8-414	3005
11	UNIV MICH-ANN ARBOR	Weiler, E J	HQ-SC	Hiltner, W A	NGR 23-005-464	3049
11	U MINN-MNPLS-ST PAUL	Boggess, A	GSFC	Sitko, M L	NAG 5-190	3075
11	U MINN-MNPLS-ST PAUL	Boggess, A	GSFC	Humphreys, R M	NAG 5-191	3076
11	U MINN-MNPLS-ST PAUL	Corrigan, J P	GSFC	Kellogg, P J	NAS 5-11310	3078
11	U MINN-MNPLS-ST PAUL	Klein, B	GSFC	Kellogg, P J	NAS 5-25753	3081
11	U MINN-MNPLS-ST PAUL	Sing, M	GSFC	Waddington, C J	NAS 5-26056	3082
11	U MINN-MNPLS-ST PAUL	Boggess, A	GSFC	Davidson, K	NSG 5397	3093
11	U MINN-MNPLS-ST PAUL	Stone, J F	MSFC	Waddington, C J	NAS 8-27977	3083
11	U MINN-MNPLS-ST PAUL	Kaluzienski, L J	HQ-SC	Waddington, C J	NGR 24-005-050	3088
11	U MINN-MNPLS-ST PAUL	Boggess, N W	HQ-SC	Ney, E	NSG 2014	3090
11	UNIV MO-ST LOUIS	Boggess, A	GSFC	Lamb, S A	NSG 5400	3143
11	UNIV NEBRASKA-LINCLN	Boggess, A	GSFC	Schmidt, E G	NSG 5391	3176
11	UNIV NEW HAMP-DURHAM	Davis, M A	GSFC	Lockwood, J A	NAS 5-25420	3199
11	UNIV NEW HAMP-DURHAM	Davis, M A	GSFC	Lockwood, J A	NAS 5-26645	3201
11	UNIV NEW HAMP-DURHAM	Holt, S S	HQ-SC	Chupp, E L	NGL 30-002-021	3203
11	UNIV NEW HAMP-DURHAM	Gilman, D A	HQ-SC	Webber, W R	NGR 30-002-052	3204
11	UNIV NEW HAMP-DURHAM	Holt, S S	HQ-SC	Lockwood, J A	NSG 7481	3208
11	UNIV OF NEW MEXICO	Stone, J F	MSFC	Burns, J O	NAG 8-386	3287
11	UNIV OKLAHOMA-NORMAN	Stone, J F	MSFC	Chincarni, G	NAG 8-372	3781
11	UNIV OREGON-EUGENE	Black, D C	ARC	Kemp, J C	NAG 2-131	3801
11	UNIV OREGON-EUGENE	Kaluzienski, L J	HQ-SC	Kemp, J C	NAGW 7	3802
11	UNIV OREGON-EUGENE	Weiler, E J	HQ-SC	Zimmerman, R L	NSG 7639	3807
11	UNIV OF PENNSYLVANIA	Boggess, A	GSFC	Koch, R H	NSG 5296	3924
11	UNIV OF PENNSYLVANIA	Jones, J B	MSFC	Koch, R H	NAG 8-346	3919
11	UNIV OF PITTSBURGH	Black, D C	ARC	Gatewood, G D	NAG 2-53	3925
11	UNIV OF PITTSBURGH	Boggess, A	GSFC	Hapke, B	NSG 5362	3942
11	UNIV OF PITTSBURGH	Boyce, J M	HQ-SL	Hapke, B	NSG 7147	3943
11	UNIV OF ROCHESTER	Goebel, J H	ARC	Forrest, W J	NAG 2-117	3513
11	UNIV OF ROCHESTER	Haughney, L C	ARC	Pipher, J L	NSG 2343	3516
11	UNIV OF ROCHESTER	Boggess, A	GSFC	Helfer, H L	NAG 5-46	3514
11	UNIV OF ROCHESTER	Boggess, A	GSFC	Savedoff, M P	NAG 5-123	3515
11	UNIV OF ROCHESTER	Kupperman, J E	GSFC	Vanhorn, H M	NSG 5354	3517
11	UNIV OF ROME	Bavely, J C	HQ-TN	Broghio, L	NASW 2135	4661
11	UNIV OF SOUTHERN CAL	Fimmel, R O	ARC	Judge, D L	NAS 2-6558	1858
11	UNIV OF SOUTHERN CAL	Pollack, J. B	ARC	Kumar, S	NCA 2-730101	1863
11	UNIV OF SOUTHERN CAL	Corrigan, J P	GSFC	Peters, G	NAG 5-126	1848
11	UNIV OF SOUTHERN CAL	Kupperman, J E, Jr	GSFC	Peters, G J	NSG 5356	1872
11	UNIV OF SOUTHERN CAL	Boggess, A	GSFC	Barry, D C	NSG 5412	1873
11	UNIV OF SOUTHERN CAL	Boggess, A	GSFC	Peters, G J	NSG 5422	1874
11	UNIV OF SOUTHERN CAL	Chipman, E	HQ-SC	Rhodes, E J	NAGW 13	1849
11	UNIV OF SOUTHERN CAL	Weiler, E J	HQ-SC	Barry, P	NAGW 147	1855
11	UNIV OF SOUTHERN CAL	Murphy, R E	HQ-SL	Broadfoot, A L	NAGW 62	1852
11	UNIV OF SOUTHERN CAL	Murphy, R E	HQ-SL	Shemansky, D E	NAGW 106	1853
11	UNIV TENNESSEE-KNOXV	Warner, J L	JSC	Taylor, L A	NGL 43-001-140	4015
11	UNIV TENNESSEE-KNOXV	Murphy, R E	HQ-SL	Fox, K	NAGW 125	3998
11	UNIV TEXAS-AUSTIN	Haughney, L	ARC	Harvey, P M	NAG 2-67	4171
11	UNIV TEXAS-AUSTIN	Haughney, L C	ARC	Evans, N J	NAG 2-133	4172
11	UNIV TEXAS-AUSTIN	Boggess, A	GSFC	Parsons, S B	NAG 5-80	4173
11	UNIV TEXAS-AUSTIN	Boggess, A	GSFC	Snedden, C	NAG 5-173	4174

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11	UNIV TEXAS-AUSTIN	Liberatore, F J	GSFC	Trafton, L M	NAS 5-25656	4179
11	UNIV TEXAS-AUSTIN	Adelman, A. G	GSFC	Silverberg, E C	NAS 5-25948	4181
11	UNIV TEXAS-AUSTIN	Boggess, A	GSFC	Parsons, S B	NSG 5328	4204
11	UNIV TEXAS-AUSTIN	Boggess, A	GSFC	Wray, J D	NSG 5337	4205
11	UNIV TEXAS-AUSTIN	Boggess, A	GSFC	Lambert, D L	NSG 5379	4206
11	UNIV TEXAS-AUSTIN	Boggess, A	GSFC	Wills, B J	NSG 5387	4207
11	UNIV TEXAS-AUSTIN	Swearingen, J C	MSFC	Wheeler, J C	NAG 8-350	4175
11	UNIV TEXAS-AUSTIN	Stone, J F	MSFC	Parsons, S B	NAG 8-404	4176
11	UNIV TEXAS-AUSTIN	O'dell, C R	MSFC	Lambert, D L	NAS 8-32905	4183
11	UNIV TEXAS-AUSTIN	O'dell, C R	MSFC	Jefferys, W H	NAS 8-32906	4184
11	UNIV TEXAS-AUSTIN	Weiler, E J	HQ-SC	Duncombe, R L	NAGW 233	4178
11	UNIV TEXAS-AUSTIN	Weiler, E J	HQ-SC	Shield, G A	NSG 7232	4209
11	UNIV TEXAS-AUSTIN	Weiler, E J	HQ-SC	Wray, J D	NSG 7371	4211
11	UNIV TEXAS-AUSTIN	Boggess, N W	HQ-SC	Evans, N J, II	NSG 7381	4212
11	UNIV TEXAS-AUSTIN	Brunk, W. E	HQ-SL	Douglas, J N	NGL 44-012-055	4196
11	UNIV TEXAS-AUSTIN	Brunk, W E	HQ-SL	Smith, H J	NGR 44-012-152	4197
11	UNIV TEXAS-AUSTIN	Brunk, W. E	HQ-SL	Mulholland, J D	NGR 44-012-282	4198
11	UNIV TEXAS-AUSTIN	Brunk, W. E	HQ-SL	Jefferys, W H	NSG 7408	4213
11	UNIV OF TOLEDO	Boggess, A	GSFC	Bopp, B W	NAG 5-67	3743
11	UNIV OF TOLEDO	Boggess, A	GSFC	Witt, W N	NAG 5-167	3744
11	UNIV OF TOLEDO	Boggess, A	GSFC	Morrison, N D	NSG 5359	3753
11	UNIV OF TOLEDO	Boggess, A	GSFC	Witt, A N	NSG 5388	3754
11	UNIV OF TOLEDO	Weiler, E J	HQ-SC	Witt, A	NAGW 89	3745
11	UNIV OF TOLEDO	Weiler, E J	HQ-SC	Bopp, B W	NAGW 229	3746
11	UNIV OF TOLEDO	Weiler, E J	HQ-SC	Witt, A N	NSG 7620	3756
11	UNIV OF TOLEDO	Murphy, R	HQ-SL	Delsemme, A H	NSG 7301	3755
11	UNIV OF UTAH	Brunk, W E	HQ-SL	Shorthill, R W	NAGW 11	4274
11	UNIV OF VIRGINIA	Boggess, A	GSFC	Thuan, T X	NAG 5-61	4401
11	UNIV OF VIRGINIA	Johnson, G	GSFC	O'Connell, R W	NAS 5-22346	4409
11	UNIV OF VIRGINIA	Stecher, T P	GSFC	O'Connell, R W	NAS 5-26110	4413
11	UNIV OF VIRGINIA	Cyphers, H D	GSFC	O'Connell, R W	NAS 5-26476	4415
11	UNIV OF VIRGINIA	White, R	MSFC	Sarazin, C L	NAG 8-308	4403
11	UNIV OF VIRGINIA	Stone, J F	MSFC	Thuan, T X	NAG 8-375	4404
11	UNIV OF VIRGINIA	Jones, J B, Jr	MSFC	Thuan, T X	NAS 8-33327	4417
11	UNIV OF VIRGINIA	Jones, J B, Jr	MSFC	Sarazin, C L	NAS 8-33348	4418
11	UNIV OF VIRGINIA	Brunk, W E	HQ-SL	Ianna, P A	NSG 7364	4427
11	UNIV OF WASHINGTON	Witteborn, F C	ARC	Cardelli, J A	NCA 2-850102	4548
11	UNIV OF WASHINGTON	Boggess, A	GSFC	Bohm, K H	NAG 5-45	4519
11	UNIV OF WASHINGTON	Boggess, A	GSFC	Hodge, P D	NAG 5-207	4522
11	UNIV OF WASHINGTON	Boggess, A.	GSFC	Wallerstein, G	NSG 5374	4555
11	UNIV OF WASHINGTON	Boggess, A.	GSFC	Szkody, P	NSG 5395	4556
11	UNIV OF WASHINGTON	Boggess, A	GSFC	Bohm-vitense, E	NSG 5398	4557
11	UNIV OF WASHINGTON	Wende, C	GSFC	Lin, C S	NSG 5410	4558
11	UNIV OF WASHINGTON	Jones, J B	MSFC	Wallerstein, G	NAG 8-342	4523
11	UNIV OF WASHINGTON	Swearingen, J C	MSFC	Sullivan, W T	NAG 8-359	4524
11	UNIV OF WASHINGTON	Swearingen, J C	MSFC	Szkody, P	NAG 8-361	4525
11	UNIV OF WASHINGTON	Swearingen, J C	MSFC	Boynton, P E	NAG 8-364	4526
11	UNIV OF WASHINGTON	Stone, J F	MSFC	Boynton, P E	NAG 8-366	4527
11	UNIV OF WASHINGTON	Stone, J F	MSFC	Bohm-vitense, E	NAG 8-378	4528
11	UNIV OF WASHINGTON	Stone, J F	MSFC	Wallerstein, G	NAG 8-399	4529
11	UNIV OF WASHINGTON	Stone, J F	MSFC	Balick, B	NAG 8-405	4530
11	UNIV OF WASHINGTON	Stone, J F	MSFC	Bohm-vitense, E	NAG 8-411	4531
11	UNIV OF WASHINGTON	Jones, J B, Jr	MSFC	Szkody, P	NAS 8-33337	4542
11	UNIV OF WASHINGTON	Gilman, D	HQ-SC	Lord, J J	NSG 7318	4562
11	UNIV WISC-MADISON	Boggess, A	GSFC	Savage, B D	NAG 5-186	4590
11	UNIV WISC-MADISON	Eiband, A M	GSFC	Anderson, C M	NAS 5-22349	4599
11	UNIV WISC-MADISON	White, R A	GSFC	Bless, R C	NAS 5-24487	4602
11	UNIV WISC-MADISON	Sours, W	GSFC	Code, A D	NAS 5-25487	4605

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11	UNIV WISC-MADISON	Vitaghiano, H D	GSFC	Savage, B C	NAS 5-25714	4606
11	UNIV WISC-MADISON	Young, E	GSFC	Code, A D	NAS 5-26055	4608
11	UNIV WISC-MADISON	Sing, M L	GSFC	Kraushaar, W L	NAS 5-26078	4609
11	UNIV WISC-MADISON	Young, E	GSFC	Code, A D	NAS 5-26777	4614
11	UNIV WISC-MADISON	Guidotti, T	GSFC	Code, A D	NGL 50-002-013	4622
11	UNIV WISC-MADISON	Guidotti, J G	GSFC	Kraushaar, W L	NGL 50-002-044	4623
11	UNIV WISC-MADISON	Bogges, A	GSFC	Code, A D	NSG 5363	4633
11	UNIV WISC-MADISON	Jones, J B	MSFC	Kraushaar, W L	NAG 8-319	4591
11	UNIV WISC-MADISON	Jones, J B	MSFC	Cassinelli, J P	NAG 8-345	4592
11	UNIV WISC-MADISON	Stone, J F	MSFC	Sanders, W T	NAG 8-401	4593
11	UNIV WISC-MADISON	Stone, J F	MSFC	Cassinelli, J P	NAG 8-410	4594
11	UNIV WISC-MADISON	Weiler, E J	HQ-SC	Code, A D	NSG 7050	4634
11	UTAH STATE UNIV	Corrigan, J P	GSFC	Raitt, W J	NAG 5-121	4284
11	VANDERBILT UNIVERSITY	Bogges, A	GSFC	Eaton, J A	NAG 5-176	4024
11	VANDERBILT UNIVERSITY	Weiler, E J	HQ-SC	Weedman, D W	NSG 7343	4028
11	VANDERBILT UNIVERSITY	Roman, N G	HQ-SC	Hall, D	NSG 7463	4029
11	VANDERBILT UNIVERSITY	Weiler, E J	HQ-SC	Hall, D	NSG 7543	4030
11	VILLANOVA UNIVERSITY	Bogges, A	GSFC	Guinan, E F	NAG 5-205	3945
11	VILLANOVA UNIVERSITY	Bogges, A	GSFC	Guinan, E F	NSG 5375	3947
11	VIRGINIA POLY INST	Jones, J B	MSFC	O'Dell, S L	NAG 8-314	4467
11	VIRGINIA POLY INST	Swearingen, J C	MSFC	O'Dell, S L	NAG 8-348	4468
11	VIRGINIA POLY INST	Jones, J B, Jr	MSFC	Dennison, B K	NAS 8-33359	4475
11	WASHINGTON ST UNIV	Bogges, A	GSFC	Lutz, J H	NSG 5383	4573
11	WASHINGTON UNIVERSITY	Corrigan, J P	GSFC	Smith, W H	NAG 5-108	3146
11	WASHINGTON UNIVERSITY	Stone, J F	MSFC	Israel, M H	NAS 8-27976	3152
11	WASHINGTON UNIVERSITY	Gilman, D A	HQ-SC	Klarmann, J	NGR 26-008-001	3157
11	WASHINGTON UNIVERSITY	Weiler, E J	HQ-SC	Smith, W H	NSG 7372	3162
11	WASHINGTON UNIVERSITY	Brunk, W E	HQ-SL	Smith, W H	NSG 7334	3161
11	WASHINGTON UNIVERSITY	Taylor, T C	HQ-SP	Walker, R M	NAGW 122	3148
11	WESLEYAN UNIVERSITY	Gull, T R	GSFC	Herbst, W	NAG 5-59	2003
11	WESLEYAN UNIVERSITY	Odell, C R	MSFC	Herbst, W	NAG 8-335	2004
11	WESTRN KENTUCKY UNIV	Bogges, A	GSFC	Hackney, K R	NSG 5238	2564
11	WHEATON COLLEGE	Bogges, A	GSFC	Barker, T	NSG 5376	2967
11	YALE UNIVERSITY	Bogges, A	GSFC	Oemler, A, Jr	NAG 5-188	2008
11	YALE UNIVERSITY	Eby, P	MSFC	Parker, P D	NAS 8-33572	2010
12	ARIZONA STATE UNIV	Carter, C H	HQ-LC	Moore, C B	NGT 03-001-800	1112
12	ARKANSAS STATE UNIV	Kohl, F J	LERC	Bennett, J E	NSG 3249	1224
12	BOSTON COLLEGE	Jaffe, R L	ARC	Guberman, S L	NAG 2-89	2750
12	BOWIE STATE COLLEGE	Halpert, G	GSFC	Rock, M	NSG 5009	2591
12	CALIF INST OF TECH	Warner, J L	JSC	Wasserburg, G J	NGL 05-002-188	1277
12	CASE WESTERN RESERVE	Seng, G T	LERC	Claspy, P C	NAG 3-98	3578
12	CASE WESTERN RESERVE	Lauver, R M	LERC	Ishida, H	NAG 3-126	3582
12	CASE WESTERN RESERVE	Lauver, R W	LERC	Ritchey, W M	NAG 3-158	3584
12	CASE WESTERN RESERVE	Lauver, R	LERC	Ritchey, W	NSG 3241	3615
12	CASE WESTERN RESERVE	Lauver, R W	LERC	Ishida, H	NSG 3272	3620
12	CASE WESTERN RESERVE	Hsu, L C	LERC	Koenig, J L	NSG 3276	3621
12	CASE WESTERN RESERVE	Jones, W R	LERC	Cahan, B D	NSG 3288	3624
12	CATHOLIC UNIVERSITY	Nava, D F	GSFC	Hunt, J B	NSG 5173	2032
12	CLARK COLLEGE	Whitten, R C	ARC	Veluri, V R	NSG 2143	2179
12	CLARKSON COL OF TECH	Schmidt, H	LERC	Jellinek, H H	NAG 3-145	3309
12	CLEVELAND STATE UNIV	Gordon, W A	LERC	Megargle, R	NSG 3308	3645
12	COLLEGE OF WM & MARY	Stclair, T L	LARC	Orwoll, R A	NAG 1-144	4311
12	COLLEGE OF WM & MARY	Johnston, N J	LARC	Kranbuehl, D E	NSG 1095	4317
12	COLORADO SCH OF MINE	Wong, E L	LERC	Daniel, S R	NAG 3-197	1879
12	COPPIN STATE COLLEGE	Gaddy, E M	GSFC	McDermott, P P	NSG 5051	2592
12	CORNELL UNIVERSITY	Devincenzi, D L	HQ-SB	Sagan, C E	NGR 33-010-101	3365
12	DREXEL UNIVERSITY	Wong, E L	LERC	Cohen, R S	NAG 3-183	3823
12	DREXEL UNIVERSITY	Torres, A L	WFC	Thornton, D C	NSG 6035	3837

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12	FLORIDA INST OF TECH	Howard, F S	KSC	Thomas, J J	NAS10-10106	2106
12	GEORGIA INST OF TECH	MacElroy, R D	ARC	Carden, J L	NCA 2-260102	2214
12	HOWARD UNIVERSITY	Dickens, P L	GSFC	Nicholson, J M	NAG 5-204	2070
12	HOWARD UNIVERSITY	Murphy, R E	HQ-SL	Jackson, W M	NSG 5071	2089
12	KENT STATE UNIV-KENT	Quattrone, P D	ARC	Madey, R	NSG 2013	3649
12	LEHIGH UNIVERSITY	Boese, R W	ARC	Lovejoy, R W	NCA 2-380101	3844
12	LEHIGH UNIVERSITY	Warner, J L	JSC	Goldstein, J I	NGR 39-007-056	3847
12	LOUISIANA TECH UNIV	Byvik, C E	LARC	Miles, A M	NAG 1-162	2574
12	MASS INST OF TECH	Brabbs, T A	LERC	Hoult, D P	NCC 3-15	2894
12	MASS INST OF TECH	Antoine, A C	LERC	Uhlmann, D R	NSG 3286	2931
12	MASS INST OF TECH	Geib, D S	HQ-SB	Hartman, H	NAGW 114	2861
12	MASS INST OF TECH	Devincenzi, D L	HQ-SB	Rich, A	NGR 22-009-277	2903
12	MICHIGAN STATE UNIV	Seng, G T	LERC	Crouch, S R	NAG 3-93	2982
12	MICHIGAN STATE UNIV	Seng, G. T	LERC	Enke, C G	NAG 3-107	2983
12	MICHIGAN TECH UNIV	Dreshfield, R L	LERC	Heckel, R W	NAG 3-216	2989
12	MISS UNIV FOR WOMEN	St Clair, T L	LARC	Pratt, J R	NSG 1539	3118
12	MOREHOUSE COLLEGE	Watson, R T	HQ-EB	Hall, J H	NSG 7652	2234
12	MUSKINGUM COLLEGE	Charleston, L J	LERC	Wallace, W J	NAG 3-79	3654
12	MUSKINGUM COLLEGE	Charleston, L J	LERC	Wallace, W J	NSG 3278	3655
12	OLD DOMINION UNIV	Phillips, D H	LARC	Ake, R L	NSG 1393	4381
12	PENN STATE U-UNIV PK	Geib, D S	HQ-SB	Wedler, F C	NSG 7515	3915
12	POLY INST OF NY	Rosser, R W	ARC	Pearce, E M	NSG 2147	3419
12	POLY INST OF NY	Devincenzi, D L	HQ-SB	Einrich, F R	NGR 33-006-070	3417
12	RENSSELAER POLY-NY	Seng, G T	GSFC	Lauer, J L	NAG 3-205	3432
12	RENSSELAER POLY-NY	Gheibley, D W	LERC	Moore, J A	NAG 3-199	3430
12	RENSSELAER POLY-NY	Bannister, T C	MSFC	Glicksman, M E	NAS 8-32690	3435
12	RENSSELAER POLY-NY	Devincenzi, D L	HQ-SB	Ferris, J P	NGR 33-018-148	3442
12	SAN FRAN STATE UNIV	Lawless, J B	ARC	Orenberg, J B	NCA 2-660102	1343
12	SAN FRAN STATE UNIV	Devincenzi, D L	HQ-SB	Orenberg, J B	NAGW 94	1342
12	SAN JOSE STATE UNIV	Miquel, J	ARC	Yengoyan, L S	NCA 2-675004	1352
12	SAN JOSE STATE UNIV	Cagliostro, D E	ARC	Ballard, R C	NCC 2-4	1361
12	SAN JOSE STATE UNIV	Wydeven, T	ARC	Spitze, L A	NCC 2-8	1362
12	SAN JOSE STATE UNIV	Heimbuch, A H	ARC	Ling, A	NCC 2-28	1363
12	SAN JOSE STATE UNIV	Wydeven, T	ARC	Spitze, L A	NCC 2-53	1367
12	SAN JOSE STATE UNIV	Kourtidis, D A	ARC	Ling, A C	NCC 2-56	1368
12	SAN JOSE STATE UNIV	Rosser, R W	ARC	Selter, G	NCC 2-81	1372
12	SAN JOSE STATE UNIV	Chang, S.	ARC	Coyne, L M	NCC 2-153	1381
12	SO ILL UNIV-CARBONDL	Carter, C H	HQ-LC	Phillips, J B	NGT 14-018-800	2302
12	SPRING ARBOR COL	Charleson, J A	LERC	Johnson, D A	NAG 3-148	2992
12	STANFORD UNIVERSITY	Desmarais, D J	ARC	Bonner, W A	NCA 2-745103	1434
12	STANFORD UNIVERSITY	Carter, C H	HQ-LC	Zare, R N	NGT 05-020-800	1489
12	STANFORD UNIVERSITY	Schmerling, E R	HQ-SC	Spreiter, J R	NAGW 86	1408
12	STATE U NY-STONY BRK	Brabbs, T A	LERC	Yang, C H	NCC 3-2	3487
12	TEXAS A&M UNIVERSITY	Gibson, E K	JSC	Young, V	NAS 9-16185	4112
12	TEXAS A&M UNIVERSITY	Devincenzi, D L	HQ-SB	Nagvary, J	NSG 7037	4132
12	TUSKEGEE INSTITUTE	Bryan, C. J	KSC	Dillon, I. G	NAG10-1	1024
12	UNIV ALA-BIRMINGHAM	Devincenzi, D L	HQ-SB	Lacey, J C, Jr	NGR 01-010-001	1031
12	UNIV ALA-HUNTSVILLE	Ladner, E R	MSFC	Hendricks, J B	NAS 8-33384	1045
12	UNIV ALA-HUNTSVILLE	Moore, W W, Jr	MSFC	Harris, J M	NAS 8-33978	1060
12	UNIV CALIF-BERKELEY	Altman, R L	ARC	Goren, S L	NCA 2-50001	1559
12	UNIV CALIF-BERKELEY	Altman, R L	ARC	Williams, M C	NCA 2-50905	1566
12	UNIV CALIF-BERKELEY	Altman, R L	ARC	Grens, E A	NCC 2-140	1572
12	UNIV CALIF-BERKELEY	Devincenzi, D. L	HQ-SB	Jukes, J H	NGR 05-003-460	1586
12	UNIV CALIF-DAVIS	Fish, R H	ARC	Needles, H L	NCC 2-20	1609
12	UNIV CALIF-L ANGELES	Arnold, J O	ARC	Heller, E J	NCC 2-156	1656
12	UNIV CALIF-L ANGELES	Warner, J L	JSC	Wasson, J T	NGL 05-007-367	1660
12	UNIV CALIF-SAN DIEGO	Warner, J. L.	JSC	Arnold, J R	NGL 05-009-148	1736
12	UNIV CALIF-SAN DIEGO	Warner, J L	JSC	Marti, K	NGL 05-009-150	1737



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12	UNIV CALIF-S BARBARA	Kohl, F J	LERC	Steinberg, M	NSG 3256	1800
12	UNIV OF CHICAGO	Warner, J L	JSC	Clayton, R N	NGL 14-001-169	2324
12	UNIV COLORADO-BOLDR	Pollack, J B	ARC	Castleman, A W	NSG 2248	1954
12	UNIV OF DAYTON	Harwell, R J	MSFC	Salter, I O	NAS 8-34544	3735
12	UNIV OF HAWAII-MANOA	Devincenzi, D L	HQ-SB	Folsome, C E	NGR 12-001-109	2263
12	UNIV HOUSTON-HOUSTON	Coleman, M	JSC	Zlatkis, A	NAS 9-16351	4149
12	UNIV HOUSTON-HOUSTON	Young, R S	HQ-SB	Becker, R S	NGR 44-005-091	4151
12	UNIV ILLINOIS-URBANA	Devincenzi, D L	HQ-SB	Woese, C R	NSG 7044	2374
12	UNIV MARYLAND-COL PK	Hochstein, L I	ARC	Ponnamperuma, C	NCA 2-420001	2686
12	UNIV MARYLAND-COL PK	Donn, B D	GSFC	Khanna, R K	NSG 5172	2719
12	UNIV MARYLAND-COL PK	Seng, G T	LERC	Adler, I	NAG 3-192	2637
12	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Adler, I	NGT 21-002-807	2710
12	UNIV MARYLAND-COL PK	Bredt, J H	HQ-SB	Ponnamperuma, C	NAGW 219	2658
12	UNIV MARYLAND-COL PK	Devincenzi, D L	HQ-SB	Ponnamperuma, C	NAGW 226	2659
12	UNIV MARYLAND-COL PK	Devincenzi, D L	HQ-SB	Ponnamperuma, C A	NGR 21-002-317	2701
12	UNIV OF MASS-AMHERST	Geib, D	HQ-SB	Huguenin, R L	NSG 7397	2962
12	UNIV OF MIAMI	Devincenzi, D L	HQ-SB	Fox, S W	NGR 10-007-008	2171
12	UNIV MICH-ANN ARBOR	Devincenzi, D L	HQ-SB	Walker, J C	NAGW 176	3010
12	UNIV MO-ROLLA	Jones, J J	LARC	Biolsi, L	NSG 1369	3140
12	UNIV OF NEW MEXICO	Warner, J L	JSC	Keil, K	NGL 32-004-063	3291
12	UNIV OF NOTRE DAME	Jaffe, R L	ARC	Huo, W M	NCC 2-147	2434
12	UNIV OF PITTSBURGH	Watson, R T	HQ-EB	Kaufman, F	NGR 39-011-161	3937
12	UNIV OF SANTA CLARA	Lawless, J E	ARC	Sweeney, M A	NCA 2-685005	1830
12	UNIV OF SANTA CLARA	Chang, S	ARC	White, D H	NCA 2-685006	1831
12	UNIV OF SOUTHERN CAL	Langhoff, S R	ARC	Segal, G A	NAG 2-77	1846
12	UNIV TEXAS-EL PASO	Duke, M	JSC	Hoffer, J M	NSG 9062	4250
12	UNIV OF TOLEDO	Stearns, C A	LERC	Edwards, J G	NSG 3250	3751
12	UNIV OF UTAH	Seng, G T	LERC	Ursenbach, W O	NAG 3-27	4270
12	UNIV OF UTAH	Devincenzi, D L	HQ-SB	Guillory, W A	NSG 7516	4283
12	UNIV OF WASHINGTON	Langhoff, S R	ARC	Davidson, E R	NSG 2365	4553
12	VANDERBILT UNIVERSITY	Johnson, M H	MSFC	Lichter, B D	NAS 8-34428	4026
12	VIRGINIA POLY INST	Progar, D J	LARC	Wightman, J P	NAG 1-127	4445
12	VIRGINIA POLY INST	Young, P R	LARC	Mason, J G	NSG 1085	4485
12	VIRGINIA POLY INST	St Clair, A K	LARC	Taylor, L T	NSG 1428	4489
12	VIRGINIA POLY INST	St Clair, T L	LARC	Wolfe, J F	NSG 1524	4491
12	WAKE FOREST UNIV	Phillips, D H	LARC	Jackels, C F	NCC 1-55	3562
12	WESTERN WASHINGTON U	Boese, R W	ARC	Wilson, H M	NCA 2-862101	4575
12	WORCESTER POLY INST	Devincenzi, D L	HQ-SB	Plumb, R C	NSG 7392	2979
12	YALE UNIVERSITY	Kohl, F J	LERC	Rosner, D E	NSG 3169	2016
13	ALABAMA A&M UNIV	Burns, R E	MSFC	Williams, A C	NSG 8068	1008
13	ARIZONA STATE UNIV	Curtis, H B	LERC	Wang, E Y	NAG 3-105	1095
13	ARIZONA STATE UNIV	Weinberg, I	LERC	Wang, E Y	NAG 3-139	1097
13	BOWIE STATE COLLEGE	Caruso, A J	GSFC	Bhatia, M S	NGR 21-027-010	2589
13	BRIGHAM YOUNG UNIV	Fimmel, R O	ARC	Jones, D E	NAS 2-7358	4267
13	CALIF INST OF TECH	Chapman, G T	ARC	Liepmann, H W.	NSG 7508	1303
13	CALIF INST OF TECH	Corrigan, J P	GSFC	Stone, E C	NAS 5-20721	1259
13	CALIF INST OF TECH	Wende, C D	GSFC	Garmire, G P	NAS 5-25049	1261
13	CALIF INST OF TECH	Warner, J L	JSC	Epstein, S	NGL 05-002-190	1278
13	CALIF INST OF TECH	Harris, J W	JSC	Albee, A L	NGL 05-002-338	1280
13	CALIF INST OF TECH	Warner, J L	JSC	Tombrello, T A	NGR 05-002-333	1286
13	CALIF INST OF TECH	DeLoach, A C	MSFC	Moore, R L	NAS 8-33215	1267
13	CALIF INST OF TECH	Carter, C H	HQ-LC	Neugebauer, G	NGT 05-002-800	1287
13	CALIF INST OF TECH	Bohlin, J D	HQ-SC	Goldreich, P	NSG 7342	1300
13	CALIF INST OF TECH	Brinton, H C	HQ-SL	Ingersoll, A P	NAGW 159	1251
13	CAL STATE U-FULLERTN	Erickson, E F	ARC	Rubin, R H	NCA 2-253101	1317
13	CAL STATE U-FULLERTN	Boese, R W	ARC	Nanes, R	NCA 2-253901	1318
13	CAL STATE U-NRTHRDGE	Chipman, E	HQ-SC	Martin, S F	NAGW 27	1327
13	CASE WESTERN RESERVE	Kolecki, J C	LARC	Mann, J	NAG 3-217	3589

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13	CASE WESTERN RESERVE	Kosmahl, H G	LERC	Hazon, D	NAG 3-24	3568
13	CASE WESTERN RESERVE	Evans, J C	LERC	Kapoor, V J	NAG 3-80	3576
13	CASE WESTERN RESERVE	Purvis, C K	LERC	Gordan, W L	NSG 3197	3609
13	CASE WESTERN RESERVE	Sarsfield, L P	LERC	Ostrach, S	NSG 3221	3613
13	CASE WESTERN RESERVE	Schaefer, D A	MSFC	Ostrach, S	NAS 8-33015	3599
13	CATHOLIC UNIVERSITY	Trombka, J I	GSFC	Werntz, C	NSG 5066	2030
13	CATHOLIC UNIVERSITY	McAvoy, N	GSFC	Kelley, G L	NSG 5111	2031
13	CATHOLIC UNIVERSITY	Carter, C H	HQ-LC	Werntz, C W	NGT 09-005-800	2029
13	CATHOLIC UNIVERSITY	Schmerling, E R.	HQ-SC	Whang, Y C	NGR 09-005-063	2028
13	CATHOLIC UNIVERSITY	Chipman, E	HQ-SC	Whang, Y C	NSG 7422	2033
13	CHRISTPHR NEWPRT COL	Byvik, C E	LARC	Buoncrisiani, A M	NSG 1514	4307
13	CITY COLLEGE OF N Y	Lauver, R W	LERC	Alfano, R R	NAG 3-130	3300
13	CITY U N Y-GRAD SCHL	Temkin, A.	GSFC	Mittleman, M H	NSG 5334	3308
13	CLARKSON COL OF TECH	Fripp, A L	LARC	Carlson, F	NSG 1572	3312
13	CLARKSON COL OF TECH	Fallon, R A.	MSFC	Subramanian, R S	NAS 8-32944	3310
13	CLEVELAND STATE UNIV	Baraona, C R	LERC	Goradia, C	NAG 3-23	3627
13	CLEVELAND STATE UNIV	Weinberg, I	LERC	Goradia, C	NAG 3-138	3631
13	CLEVELAND STATE UNIV	Baraona, C R	LERC	Goradia, C	NAG 3-144	3632
13	COLORADO STATE UNIV	Exton, R J	LARC	She, C Y	NSG 1594	1897
13	COLORADO STATE UNIV	Nakanishi, S.	LERC	Etters, R D	NAG 3-34	1881
13	COLORADO STATE UNIV	Mantenieks, M A	LERC	Robinson, R S	NAG 3-209	1884
13	COLORADO STATE UNIV	Jones, W R	LERC	Spain, I L	NAGW 8	1889
13	COLORADO STATE UNIV	Hendricks, R C	LERC	Etters, R D	NGR 06-002-159	1895
13	COLORADO STATE UNIV	Mirtuch, M J	LERC	Kaufman, H R	NSG 3086	1899
13	COLORADO STATE UNIV	Staskus, J V	LERC	Yadlowsky, E J	NSG 3145	1901
13	COLORADO STATE UNIV	Grier, N T	LERC	Kaufman, H R	NSG 3196	1902
13	COLUMBIA UNIVERSITY	Jennings, N	GSFC	Yavarkousky, J H	NAS 5-26398	3325
13	CONCORDIA COL-MOORHD	Donn, B	GSFC	Bailey, C L	NAS 5-26221	3068
13	CORNELL UNIVERSITY	McCreight, C R	ARC	Houck, J R	NAG 2-70	3345
13	CORNELL UNIVERSITY	Conrath, B J	GSFC	Gierasch, P J	NAS 5-23236	3355
13	CORNELL UNIVERSITY	Brown, G V.	LERC	Ashcroft, N W	NSG 7487	3384
13	CORNELL UNIVERSITY	Birmingham, T. J	HQ-SC	Sudan, R N	NAGW 90	3351
13	CORNELL UNIVERSITY	Mayr, H G	HQ-SC	Farley, D T	NGR 33-010-161	3368
13	DARTMOUTH COLLEGE	Cooper, D M	ARC	Christy, R W	NSG 2397	3190
13	DREXEL UNIVERSITY	Brooks, W F	ARC	Acquista, C A	NSG 2357	3834
13	DREXEL UNIVERSITY	Nelson, E D	GSFC	House, F B	NAS 5-22946	3828
13	DREXEL UNIVERSITY	Whiting, E E	HQ-RT	Rosen, G H	NSG 7491	3838
13	DUKE UNIVERSITY	Brooks, W F	LARC	Meyer, H	NAG 2-128	3522
13	FISK UNIVERSITY	Kroes, R L	MSFC	Springer, J M	NAG 8-10	3985
13	FISK UNIVERSITY	Kroes, R L	MSFC	Silberman, E	NSG 8060	3986
13	FLORIDA A&M UNIV	Temkin, A	GSFC	Jones, H W	NSG 5307	2105
13	GEORGIA INST OF TECH	Feiler, C E	LERC	Wyvill, J C	NSG 3228	2227
13	GRAMBLING STATE UNIV	Hanssen, F A	MSFC	Cross, M A	NAG 8-2	2565
13	HAMPTON INSTITUTE	Jalufka, N W	LARC	Han, K S	NSG 1595	4340
13	HARVARD UNIVERSITY	Hudson, R D	GSFC	Parkinson, W H	NAG 5-144	2771
13	HARVARD UNIVERSITY	Guidotti, J G	GSFC	Parkinson, W H	NSG 5128	2800
13	HARVARD UNIVERSITY	Hudson, R D	GSFC	Parkinson, W H	NSG 5176	2801
13	HARVARD UNIVERSITY	Snoddy, W C	MSFC	Vaiana, G S	NAS 8-31374	2786
13	HARVARD UNIVERSITY	Fallon, R A.	MSFC	Turnbull, D	NAS 8-32691	2787
13	HARVARD UNIVERSITY	Chipman, E	HQ-SC	Vaiana, G S	NAGW 2	2776
13	HARVARD UNIVERSITY	Birmingham, T J	HQ-SC	Rosner, R	NAGW 79	2777
13	HARVARD UNIVERSITY	Chipman, E	HQ-SC	Parkinson, W H	NGL 22-007-006	2792
13	HARVARD UNIVERSITY	Bohlin, J D	HQ-SC	Vaiana, G S	NSG 7497	2807
13	HARVARD UNIVERSITY	Bohlin, J D	HQ-SC	Vaiana, G S	NSG 7537	2809
13	HARVARD UNIVERSITY	Chipman, E	HQ-SC	Maxwell, A	NSG 7648	2810
13	HOUSTON BAPTIST UNIV	McCoy, J E	JSC	Warren, D C	NAG 9-16	4042
13	HOWARD UNIVERSITY	Miller, G E	GSFC	Halpern, J B	NAG 5-17	2064
13	HOWARD UNIVERSITY	Osantowski, J. F	GSFC	Catchings, R M	NAG 5-79	2067

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13	HOWARD UNIVERSITY	Yin, L I	GSFC	Tsang, T	NAG 5-156	2068
13	HOWARD UNIVERSITY	Yin, L I	GSFC	Tsang, T	NGR 09-011-057	2082
13	HOWARD UNIVERSITY	Alcorn, G E	GSFC	Harris, G L	NSG 5158	2090
13	JOHNS HOPKINS UNIV	Lawandy, N M	GSFC	Robinson, D W	NAG 5-157	2596
13	JOHNS HOPKINS UNIV	Fowler, W S	GSFC	Fastie, W G	NAS 5-25358	2602
13	JOHNS HOPKINS UNIV	Carter, C H	HQ-LC	Phillips, O	NGT 21-001-980	2616
13	JOHNS HOPKINS UNIV	Carter, C H	HQ-LC	Judd, B R	NGT 21-001-981	2617
13	JOHNS HOPKINS UNIV	Weiler, E J	HQ-SC	Moos, H W	NAGW 16	2598
13	JOHNS HOPKINS UNIV	Mayr, H G	HQ-SC	Krimigis, S M	NAGW 154	2599
13	JOHNS HOPKINS UNIV	Mayr, H G	HQ-SC	Krimigis, S M	NSG 7055	2623
13	LEHIGH UNIVERSITY	Williams, J R	MSFC	Van Derhoff, J W	NAS 8-32951	3843
13	MASS INST OF TECH	Davis, M A	GSFC	Bridge, H S	NAS 5-11062	2873
13	MASS INST OF TECH	Hardin, J C	LARC	Young, J E	NAG 1-12	2813
13	MASS INST OF TECH	Bailey, M C	LARC	Hollister, W M	NAG 1-100	2818
13	MASS INST OF TECH	Katzberg, S J	LARC	Freed, C	NAG 1-164	2821
13	MASS INST OF TECH	Singh, J J	LARC	Greytak, T J	NSG 1551	2917
13	MASS INST OF TECH	Brooks, T F	LARC	Harris, W L	NSG 1583	2918
13	MASS INST OF TECH	Reeves, F A	MSFC	Hitt, A F	NAS 8-32994	2882
13	MASS INST OF TECH	De Loach, A C	MSFC	Sullivan, J D	NAS 8-33137	2883
13	MASS INST OF TECH	Carter, C H	HQ-LC	Lewin, W	NGT 22-009-902	2913
13	MASS INST OF TECH	Mayr, H G	HQ-SC	Bridge, H S	NAGW 165	2862
13	MASS INST OF TECH	Mayr, H G	HQ-SC	Bridge, H S	NGL 22-009-015	2896
13	MIAMI UNIVERSITY	Deyoung, R J	LARC	Wells, W E	NCC 1-12	3653
13	MICHIGAN STATE UNIV	Chipman, E	HQ-SC	Stein, R F	NSG 7293	2988
13	MISSISSIPPI STATE U	Nachtwey, D S	JSC	Rundel, R	NAS 9-16273	3111
13	NEW MEX ST U-LAS CR	Krishen, K	JSC	Carver, K	NAS 9-16092	3278
13	NEW MEX ST U-LAS CR	Brinton, H C	HQ-SL	Beebe, R F	NAGW 167	3274
13	NEW YORK UNIVERSITY	Bogges, N W	HQ-SC	Glassgold, A E	NGR 33-016-196	3405
13	N CAR CENTRAL UNIV	McAvoy, N	GSFC	Jones, C R	NSG 5120	3536
13	N CAR CENTRAL UNIV	Katzberg, S J	LARC	Dutta, J M	NAG 1-187	3535
13	NO CAROLINA STATE U	Yu, J C	LARC	Hodgson, T H	NAG 1-29	3538
13	NO CAROLINA STATE U	Meador, W E	LARC	Hassan, H A	NCC 1-54	3550
13	NO CAROLINA STATE U	Long, E R, Jr	LARC	Fornes, R E	NSG 1562	3555
13	NORTHWESTERN UNIV	Chamis, C C	LERC	Nemat-nasser, S	NAG 3-134	2287
13	OHIO STATE UNIV	Boese, R W	ARC	Rao, K N	NSG 2175	3683
13	OLD DOMINION UNIV	Fowler, W B	GSFC	Becher, J	NSG 5289	4394
13	OLD DOMINION UNIV	Hoell, J M	LARC	Copeland, G E	NAG 1-1	4342
13	OLD DOMINION UNIV	Holmes, H K	LARC	Zuckerwar, A J	NAG 1-15	4343
13	OLD DOMINION UNIV	Holmes, H K	LARC	Becher, J E	NAG 1-142	4354
13	OLD DOMINION UNIV	Browell, E V	LARC	Copeland, G E	NCC 1-32	4370
13	OLD DOMINION UNIV	Melfi Jr, L T	LARC	Brock, F J	NSG 1271	4378
13	OLD DOMINION UNIV	Wilson, J W	LARC	Harries, W L	NSG 1568	4389
13	OREGON GRADUATE CTR	McKenzie, R L	ARC	Elliott, R A	NSG 2387	3786
13	OREGON GRADUATE CTR	Carter, C H	HQ-LC	Elliott, R A	NGT 38-014-800	3785
13	OREGON STATE UNIV	Harris, J W	JSC	Schmitt, R A	NGL 38-002-039	3794
13	PENN STATE U-UNIV PK	Spencer, N W	GSFC	Nisbet, J S	NSG 5212	3912
13	PENN STATE U-UNIV PK	Staskus, J V	LERC	Robinson, J W	NSG 3166	3902
13	PENN STATE U-UNIV PK	Staskus, J V	LERC	Kendall, B R	NSG 3301	3907
13	PENN STATE U-UNIV PK	Carter, C H	HQ-LC	Nisbet, J S	NGT 39-009-800	3893
13	PENN STATE U-UNIV PK	Mayr, H G	HQ-SC	Nisbet, J S	NGL 39-009-003	3891
13	POLY INST OF NY	Hedin, A E	HQ-SC	Gross, S H	NAGW 51	3416
13	PRINCETON UNIVERSITY	McKenzie, R L	ARC	Miles, R B	NSG 2366	3241
13	PRINCETON UNIVERSITY	Williams, J T	GSFC	York, D G	NSG 5277	3246
13	PRINCETON UNIVERSITY	Williams, J R	MSFC	Saville, D A	NAS 8-32614	3232
13	PRINCETON UNIVERSITY	Taylor, T C	HQ-SP	Ostriker, J P	NAGW 120	3223
13	PURDUE UNIVERSITY	Riley, T J	LERC	Taylor, R E	NAS 3-22529	2408
13	RENSSELAER POLY-NY	Meador, W E	LARC	Lichenstein, R M	NSG 1628	3445
13	RENSSELAER POLY-NY	Jones, W R, Jr	LERC	Lauer, J L	NSG 3170	3446

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13	RENSSELAER POLY-NY	Lacy, L L	MSFC	Ross, S	NAS 8-33074	3437
13	RICE UNIVERSITY	Taylor, H A , Jr	GSFC	Cloutier, P A	NAS 5-23338	4058
13	RICE UNIVERSITY	Mumma, M J	GSFC	Chamberlain, J W	NGT 44-006-800	4070
13	RICE UNIVERSITY	Talley, D H	MSFC	Anderson, H R	NAS 8-33771	4063
13	RICE UNIVERSITY	Mayr, H G	HQ-SC	Dessler, A J	NAGW 166	4055
13	RICE UNIVERSITY	Mayr, H G	HQ-SC	Hill, T W	NAGW 168	4056
13	RICE UNIVERSITY	Mayr, H G	HQ-SC	Wolf, R A	NGL 44-006-012	4067
13	RICE UNIVERSITY	Hedin, A	HQ-SC	Dessler, A J	NGR 44-006-137	4069
13	SO UNIV & A&M COL-BR	McClure, J C	MSFC	Mohanty, R C	NAG 8-4	2577
13	STANFORD UNIVERSITY	Brooks, W F	ARC	Fairbanks, W M	NAG 2-62	1394
13	STANFORD UNIVERSITY	Caroff, L J	ARC	Petrosian, V	NCA 2-745008	1431
13	STANFORD UNIVERSITY	Arnold, J O	ARC	Heinemann, K	NCC 2-46	1450
13	STANFORD UNIVERSITY	Chackerians, C	ARC	Byer, R L	NCC 2-50	1451
13	STANFORD UNIVERSITY	Arnold, J O	ARC	Heinemann, K	NCC 2-111	1466
13	STANFORD UNIVERSITY	Kittel, P	ARC	Geballe, T H	NCC 2-120	1468
13	STANFORD UNIVERSITY	Cooper, D M	ARC	Tiller, W A	NCC 2-125	1469
13	STANFORD UNIVERSITY	Wales, R O	GSFC	Wilcox, J M	NAS 5-24420	1416
13	STANFORD UNIVERSITY	Guidotti, J G	GSFC	Walker, A B	NSG 5131	1498
13	STANFORD UNIVERSITY	Potter, R A	MSFC	Everitt, C W	NAS 8-32355	1422
13	STANFORD UNIVERSITY	Schwenk, F C	HQ-RT	Harris, S E	NSG 7619	1508
13	STANFORD UNIVERSITY	Birmingham, T J	HQ-SC	Sturrock, P A	NAGW 92	1409
13	STANFORD UNIVERSITY	Mayr, H G	HQ-SC	Helliwell, R A	NAGW 164	1412
13	STANFORD UNIVERSITY	Mayr, H G	HQ-SC	Helliwell, R. A	NGL 05-020-008	1476
13	STANFORD UNIVERSITY	Chipman, E	HQ-SC	Sturrock, P A	NGL 05-020-272	1480
13	STANFORD UNIVERSITY	Chipman, E	HQ-SC	Tyler, G L	NSG 7552	1506
13	STANFORD UNIVERSITY	Brinton, H C	HQ-SL	Eshleman, V R	NAGW 152	1411
13	STATE U NY-STONY BRK	Ramoty, R	GSFC	Forman, M A	NAS 5-26395	3484
13	STATE U NY-STONY BRK	Warner, J L	JSC	Lindsley, D H	NGL 33-015-130	3490
13	STATE U NY-STONY BRK	Warner, J L	JSC	Papike, J J	NSG 9044	3503
13	STATE U NY-STONY BRK	Cochran, T N	LERC	Berlad, A	NSG 3298	3497
13	STATE U NY-STONY BRK	Brinton, H C	HQ-SL	Caldwell, J J	NAGW 160	3480
13	TALLADEGA COLLEGE	Whitten, R C	ARC	Morrison, R A	NSG 2217	1018
13	TEXAS A&M UNIVERSITY	Yu, J C	LARC	Morrison, G L	NAG 1-112	4085
13	UNIV OF AKRON	Golub, M A	ARC	Hamed, G	NCC 2-131	3702
13	UNIV ALA-HUNTSVILLE	Hanssen, T	MSFC	Wu, S T	NAS 8-28097	1034
13	UNIV ALA-HUNTSVILLE	Chappell, C R	MSFC	Comfort, R H	NAS 8-30563	1036
13	UNIV ALA-HUNTSVILLE	Parnell, T A	MSFC	Gregory, J C	NAS 8-31170	1037
13	UNIV ALA-HUNTSVILLE	Krupnick, A C	MSFC	Staton, B G	NAS 8-31293	1038
13	UNIV ALA-HUNTSVILLE	Vaughn, O H	MSFC	Hung, R J	NAS 8-31729	1039
13	UNIV ALA-HUNTSVILLE	Parnell, T A	MSFC	Gregory, J C	NAS 8-31895	1040
13	UNIV ALA-HUNTSVILLE	Urban, E W	MSFC	Karr, G R	NAS 8-32818	1041
13	UNIV ALA-HUNTSVILLE	Ethridge, E C	MSFC	Rush, J E	NAS 8-33731	1052
13	UNIV ALA-HUNTSVILLE	Fishman, G J	MSFC	Gregory, J C	NAS 8-33975	1058
13	UNIV ALA-HUNTSVILLE	Chappell, C R	MSFC	Comfort, R H	NAS 8-33982	1061
13	UNIV ALA-HUNTSVILLE	Williams, J R	MSFC	Workman, G L	NAS 8-34530	1067
13	UNIV ALA-HUNTSVILLE	Green, J L	MSFC	Horowitz, J L	NGT 01-002-082	1071
13	UNIV ALA-HUNTSVILLE	Carter, C H	HQ-LC	Horowitz, J L	NGT 01-008-800	1074
13	UNIV ALA-HUNTSVILLE	Carter, C H	HQ-LC	Wagner, P E	NGT 01-008-801	1075
13	UNIV ALA-HUNTSVILLE	Carter, C H	HQ-LC	Smalley, L. L	NGT 01-008-802	1076
13	UNIV ALA-HUNTSVILLE	Chipman, E	HQ-SC	Wu, S T	NAGW 9	1032
13	UNIV ALASKA-FAIRBNKS	Spencer, N W	GSFC	Rees, M H.	NSG 5219	1089
13	UNIV OF ARIZONA	Cressy, P J , Jr	GSFC	Slater, P N	NAG 5-196	1138
13	UNIV OF ARIZONA	Mayr, H G	HQ-SC	Sonett, C P	NAGW 157	1153
13	UNIV OF ARIZONA	Mayr, H G	HQ-SC	Hsieh, K C	NGR 03-002-107	1188
13	UNIV OF ARIZONA	Mayr, H G	HQ-SC	Sonett, C P	NSG 7024	1202
13	UNIV CALIF-BERKELEY	Kittel, P	ARC	Richards, P L	NAG 2-102	1510
13	UNIV CALIF-BERKELEY	Barnes, A	ARC	Anderson, K A	NCC 2-105	1571
13	UNIV CALIF-BERKELEY	Kowalski, G E	GSFC	Anderson, K A	NAS 5-20079	1546

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13	UNIV CALIF-BERKELEY	Wales, R O	GSFC	Heckman, H K	NAS 5-20995	1547
13	UNIV CALIF-BERKELEY	Guidotti, J G	GSFC	Mozer, F S	NGR 05-003-239	1581
13	UNIV CALIF-BERKELEY	Warner, J L	JSC	Reynolds, J H	NGL 05-003-409	1579
13	UNIV CALIF-BERKELEY	Sachse, G W	LARC	Chiao, R Y	NSG 1637	1593
13	UNIV CALIF-BERKELEY	Anderson, L M	LERC	Gustafson, T K	NAG 3-88	1511
13	UNIV CALIF-BERKELEY	Chai, A T	LERC	Concus, K	NAG 3-146	1515
13	UNIV CALIF-BERKELEY	Birmingham, T J	HQ-SC	Hudson, M K	NAGW 75	1539
13	UNIV CALIF-BERKELEY	Chipman, E G	HQ-SC	Lin, R P	NSG 7527	1603
13	UNIV CALIF-IRVINE	Whiting, E E	HQ-RT	Wallis, R F	NSG 7472	1625
13	UNIV CALIF-IRVINE	Birmingham, T J	HQ-SC	Vanhoven, G	NAGW 93	1617
13	UNIV CALIF-IRVINE	Chipman, E	HQ-SC	Van Hoven, G	NSG 7375	1624
13	UNIV CALIF-L ANGELES	Bullock, G	GSFC	Coroniti, F V	NAS 5-25039	1645
13	UNIV CALIF-L ANGELES	Warner, J L	JSC	Kaplan, I R	NGR 05-007-289	1662
13	UNIV CALIF-L ANGELES	Rice, E J	LERC	Charwat, A F	NSG 3236	1673
13	UNIV CALIF-L ANGELES	Birmingham, T J	HQ-SC	Abdulla, M A	NAGW 78	1636
13	UNIV CALIF-L ANGELES	Mayr, H G	HQ-SC	Walker, R J	NAGW 162	1640
13	UNIV CALIF-L ANGELES	Chipman, E C	HQ-SC	Ulrich, R K	NSG 7407	1689
13	UNIV CALIF-SAN DIEGO	Ramaty, R	GSFC	Lingenfelter, R E	NAS 5-26668	1722
13	UNIV CALIF-SAN DIEGO	Cochran, T H	LERC	Williams, F A	NSG 3296	1745
13	UNIV CALIF-SAN DIEGO	DeLoach, A C	MSFC	Svestka, Z	NAS 8-32984	1724
13	UNIV CALIF-SAN DIEGO	Kaluzienski, L J	HQ-SC	Peterson, L E	NGL 05-005-003	1731
13	UNIV CALIF-SAN DIEGO	Mayr, H G	HQ-SC	McIlwain, C E	NGL 05-005-007	1733
13	UNIV CALIF-SAN DIEGO	Chipman, E	NSG 7161	Peterson, L E	NSG 7161	1752
13	UNIV CALIF-SAN DIEGO	Chipman, E	HQ-SC	Canfield, R C	NSG 7406	1755
13	UNIV CALIF-S BARBARA	Brooks, W F	ARC	Vanyo, J	NAG 2-27	1783
13	UNIV CALIF-S BARBARA	McKenzie, R L	ARC	Colson, W B	NAG 2-48	1784
13	UNIV OF CHICAGO	Wales, R O	GSFC	Meyer, P	NAS 5-20674	2309
13	UNIV OF CHICAGO	Davis, M A	GSFC	Simpson, J A	NAS 5-24430	2310
13	UNIV OF CHICAGO	Harris, J W	JSC	Anders, E	NGL 14-001-167	2323
13	UNIV OF CHICAGO	Warner, J L	JSC	Smith, J V	NGL 14-001-171	2325
13	UNIV OF CINCINNATI	Riley, T J	LERC	Jackson, H	NAG 3-128	3711
13	UNIV COLORADO-BOLDR	Ramaty, R	GSFC	Zweibel, E G	NAS 5-26535	1946
13	UNIV COLORADO-BOLDR	Guidotti, J G	GSFC	Rottman, G T	NSG 5178	1957
13	UNIV COLORADO-BOLDR	Jalufka, N W	LARC	Leone, S R	NAG 1-170	1910
13	UNIV COLORADO-BOLDR	Birmingham, T J	HQ-SC	Dulk, G A	NAGW 91	1931
13	UNIV COLORADO-BOLDR	Chipman, E	HQ-SC	Linsky, J L	NGL 06-003-057	1951
13	UNIV COLORADO-BOLDR	Chipman, E	HQ-SC	Dulk, G A	NSG 7287	1965
13	UNIV COLORADO-BOLDR	Chipman, E	HQ-SC	Thomas, R N	NSG 7291	1966
13	UNIV COLORADO-BOLDR	Weiler, E J	HQ-SC	Timothy, J G	NSG 7459	1967
13	UNIV COLORADO-BOLDR	Chipman, E	HQ-SC	Smith, D F	NSG 7507	1968
13	UNIV COLORADO-BOLDR	Chipman, E	HQ-SC	Gebbie, K B	NSG 7511	1969
13	UNIV COLORADO-BOLDR	Brinton, H C	HQ-SL	Hord, C W	NAGW 155	1932
13	UNIV COLORADO-BOLDR	Brinton, H C	HQ-SL	West, R A	NAGW 156	1933
13	UNIV OF DAYTON	Holmes, H K	LARC	Harris, J S	NAG 1-143	3729
13	UNIV OF DENVER	Goldberg, R	GSFC	Barcus, J	NAS 5-25862	1981
13	UNIV OF DENVER	Mayr, H G	HQ-SC	Patel, V L	NAGW 158	1977
13	UNIV DIST COLUMBIA	Mentall, J E	GSFC	Morgan, H D	NSG 5192	2098
13	UNIV OF FLORIDA	Deyoung, R J	LARC	Schneider, R T	NAG 1-135	2126
13	UNIV OF FLORIDA	Meador, W E	LARC	Ohrn, N Y	NAG 1-178	2128
13	UNIV OF HAWAII-MANOA	DeLoach, A C	MSFC	Heasley, J N	NAS 8-33219	2256
13	UNIV OF HAWAII-MANOA	Chipman, E	HQ-SC	Jefferies, J T	NSG 7536	2271
13	UNIV OF HAWAII-MANOA	Brinton, H C	HQ-SL	Pilcher, C B	NAGW 153	2252
13	UNIV OF HAWAII-MANOA	Boyce, J M	HQ-SL	Pilcher, C B	NSG 7633	2274
13	UNIV HOUSTON-HOUSTON	Early, L J	WFC	Sheldon, W R	NAG 6-18	4141
13	UNIV ILLINOIS-URBANA	Spencer, N W	GSFC	Sechrist, C F, Jr	NSG 5213	2370
13	UNIV ILLINOIS-URBANA	Jalufka, N W	LARC	Miley, G H	NSG 1547	2366
13	UNIV ILLINOIS-URBANA	Deyoung, R J	LARC	Verdeyen, J T	NSG 1609	2367
13	UNIV ILLINOIS-URBANA	Cochran, T H	LERC	Strehlow, R A	NSG 3293	2368

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13	UNIV OF IOWA	Corrigan, J P	GSFC	Gurnett, D A	NAS 5-20093	2469
13	UNIV OF IOWA	Wales, B	GSFC	Frank, L A	NAS 5-20094	2470
13	UNIV OF IOWA	Fellerman, K D	GSFC	Frank, L A	NAS 5-24293	2471
13	UNIV OF IOWA	Fellerman, K D	GSFC	Shawhan, S D	NAS 5-24294	2472
13	UNIV OF IOWA	Corrigan, J P	GSFC	Frank, L A	NAS 5-25530	2473
13	UNIV OF IOWA	Sovey, J S	LERC	Carpenter, R T	NAG 3-206	2463
13	UNIV OF IOWA	Guynes, B V	MSFC	Shawhan, S	NAS 8-33770	2481
13	UNIV OF IOWA	Blue, J W	HQ-RT	Stwalley, W C	NSG 7471	2486
13	UNIV OF IOWA	Mayr, H G	HQ-SC	Van Allen, J A	NGL 16-001-002	2482
13	UNIV OF IOWA	Mayr, H G	HQ-SC	Gurnett, D A	NGL 16-001-043	2483
13	UNIV OF KANSAS	Purvis, C K	LERC	Enoch, J	NSG 3290	2530
13	UNIV MARYLAND-COL PK	Ramaty, R	GSFC	Chang, C C	NAG 5-135	2646
13	UNIV MARYLAND-COL PK	Guidotti, J G	GSFC	Mazzocchi, P H	NAG 5-169	2648
13	UNIV MARYLAND-COL PK	Corrigan, J P	GSFC	Gloeckler, G	NAS 5-11063	2660
13	UNIV MARYLAND-COL PK	Corrigan, J P	GSFC	Gloeckler, G	NAS 5-20062	2661
13	UNIV MARYLAND-COL PK	Conrath, B J	GSFC	Ponnamperuma, C A	NAS 5-23237	2662
13	UNIV MARYLAND-COL PK	Ramaty, R	GSFC	Eichler, D	NAS 5-26582	2673
13	UNIV MARYLAND-COL PK	Dombrowski, M	GSFC	Wilkerson, T D	NAS 5-26654	2677
13	UNIV MARYLAND-COL PK	Hoffman, R A	GSFC	Coplan, M A	NGR 21-002-291	2699
13	UNIV MARYLAND-COL PK	Teegarden, B J	GSFC	Gloeckler, G	NGR 21-002-316	2700
13	UNIV MARYLAND-COL PK	Heaps, W S	GSFC	McIlrath, T J	NSG 5313	2722
13	UNIV MARYLAND-COL PK	Singh, J J	LARC	Weber, J	NAG 1-151	2635
13	UNIV MARYLAND-COL PK	Deloach, A C	MSFC	Rundu, M R	NAS 8-33105	2678
13	UNIV MARYLAND-COL PK	Urban, E W	MSFC	Geisler, J E	NAS 8-33557	2682
13	UNIV MARYLAND-COL PK	Watson, R T	HQ-EB	Ginter, M L	NSG 7340	2735
13	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	McDonald, F B	NGT 21-002-803	2706
13	UNIV MARYLAND-COL PK	Whiting, E E	HQ-RT	Weber, J	NSG 7196	2732
13	UNIV MARYLAND-COL PK	Birmingham, T J	HQ-SC	Papadopoulos, K	NAGW 81	2656
13	UNIV MARYLAND-COL PK	Chipman, E	HQ-SC	Gloeckler, G	NAGW 101	2657
13	UNIV MARYLAND-COL PK	Chipman, E	HQ-SC	Kundu, M R	NGR 21-002-199	2696
13	UNIV MARYLAND-COL PK	Bohlin, J D	HQ-SC	Spicer, D S	NSG 7427	2737
13	UNIV MICH-ANN ARBOR	Fellerman, K D	GSFC	Carrigan, G R	NAS 5-24295	3021
13	UNIV MICH-ANN ARBOR	Fellerman, K D	GSFC	Hays, P B	NAS 5-24296	3022
13	UNIV MICH-ANN ARBOR	Bullock, G	GSFC	Nagy, A F	NAS 5-25038	3026
13	UNIV MICH-ANN ARBOR	Haykin, D	GSFC	Carignan, G R	NAS 5-25158	3029
13	UNIV MICH-ANN ARBOR	Krehbiel, J P	GSFC	Carignan, G R	NAS 5-25409	3030
13	UNIV MICH-ANN ARBOR	Bissell, E E	GSFC	Sharp, W E	NGR 23-005-360	3048
13	UNIV MICH-ANN ARBOR	Chappell, C R	MSFC	Nagy, A F	NAS 8-34533	3041
13	UNIV MICH-ANN ARBOR	Mayr, H G	HQ-SC	Samir, U	NGR 23-005-320	3047
13	UNIV OF MINN-DULUTH	Shook, D	LERC	Sydor, M	NAG 3-165	3069
13	U MINN-MNPLS-ST PAUL	Brooks, W F	ARC	Scriven, L E	NAG 2-63	3073
13	U MINN-MNPLS-ST PAUL	Sugiura, M	GSFC	Cahill, L J, Jr	NAS 5-25389	3080
13	U MINN-MNPLS-ST PAUL	Guidotti, J G	GSFC	Winckler, J R	NSG 5088	3091
13	U MINN-MNPLS-ST PAUL	Guidotti, J	GSFC	Kellogg, P J	NSG 5373	3092
13	U MINN-MNPLS-ST PAUL	Warner, J L	JSC	Pepin, R O	NGL 24-005-225	3086
13	U MINN-MNPLS-ST PAUL	Rice, E J	LERC	Lambert, R F	NAG 3-161	3074
13	UNIV NEBRASKA-LINCLN	Flood, D J	LERC	Woollam, J A	NAG 3-120	3170
13	UNIV NEW HAMP-DURHAM	Ogilvie, K. W	GSFC	Hollweg, J V	NAG 5-130	3193
13	UNIV NEW HAMP-DURHAM	Trainor, J H.	GSFC	Webber, W R	NAS 5-24354	3198
13	UNIV NEW HAMP-DURHAM	Von Rosenvinge, T T	GSFC	Fisk, L A	NAS 5-25642	3200
13	UNIV NEW HAMP-DURHAM	Birmingham, T J.	HQ-SC	Fisk, L A	NAGW 76	3196
13	UNIV NEW HAMP-DURHAM	Chipman, E	HQ-SC	Fisk, L A	NSG 7411	3207
13	UNIV OF NOTRE DAME	Groenewga, J	LERC	Atassi, H	NSG 3195	2437
13	UNIV OREGON-EUGENE	Brooks, W	ARC	Donnelly, R	NAG 2-7	3800
13	UNIV OREGON-EUGENE	Warner, J L	JSC	Weill, D F	NGL 38-003-022	3804
13	UNIV OF PACIFIC	Lee, G	ARC	Perry, R L	NCA 2-588001	1814
13	UNIV OF PITTSBURGH	Cooper, D M	ARC	Jordan, K D	NSG 2407	3938
13	UNIV OF PITTSBURGH	Kostiuk, T	GSFC	Falk, J	NAS 5-25013	3929

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13	UNIV OF ROCHESTER	Chipman, E G	HQ-SC	Thomas, J H	NSG 7562	3518
13	UNIV SAN FRANCISCO	Thirolf, R G	JSC	Benton, E V	NAS 9-15337	1820
13	UNIV SAN FRANCISCO	Parnell, T A	MSFC	Benton, E V	NAS 8-26758	1817
13	UNIV SAN FRANCISCO	Parnell, T A	MSFC	Benton, E V	NAS 8-34340	1818
13	UNIV OF SANTA CLARA	Whitten, R C	ARC	McCormick, P T	NCA 2-685906	1835
13	UNIV OF SANTA CLARA	McKenzie, R L	ARC	Perkins, P E	NCC 2-117	1840
13	UNIV OF SOUTHERN CAL	Bissell, E E	GSFC	Judge, D L	NSG 5108	1871
13	UNIV OF SOUTHERN CAL	Schmerling, E R	HQ-SC	Intriligator, D S	NGR 05-018-181	1866
13	UNIV OF SOUTHERN CAL	Cauffman, D P	HQ-SC	Intriligator, D S	NGR 05-018-185	1867
13	UNIV OF SOUTHERN CAL	Brinton, H C	HQ-SL	Broadfoot, L A	NAGW 161	1856
13	UNIV OF SOUTHERN CAL	Brinton, H C	HQ-SL	Wu, F	NAGW 163	1857
13	UNIV SO MISSISSIPPI	Jones, J J	LARC	Rayborn, G	NAG 1-49	3119
13	UNIV SO MISSISSIPPI	Wood, G M	LARC	Rayborn, G	NAS 1-16503	3120
13	UNIV TENNESSEE-KNOXV	Maguire, W C	GSFC	Fox, K	NAS 5-25428	3999
13	UNIV TENNESSEE-KNOXV	Fichtl, G H	MSFC	Antar, B	NAS 8-33447	4007
13	UNIV TENNESSEE-KNOXV	Parker, J R	MSFC	Hung, J C	NAS 8-33849	4009
13	UNIV TENNESSEE-KNOXV	Jones, L W	MSFC	Keefer, D R	NAS 8-34320	4011
13	UNIV TEXAS-AUSTIN	Rice, E J	LERC	Blackstock, D T	NSG 3198	4203
13	UNIV TEXAS-DALLAS	Fellerman, K D	GSFC	Heelis, R A	NAS 5-24297	4224
13	UNIV TEXAS-DALLAS	Fellerman, K D	GSFC	Hanson, W B	NAS 5-24298	4225
13	UNIV TEXAS-DALLAS	Fellerman, K D	GSFC	Winningham, J D	NAS 5-24299	4226
13	UNIV TEXAS-DALLAS	Caporale, A J	GSFC	Hanson, W B	NAS 5-25310	4227
13	UNIV TEXAS-DALLAS	Guidotti, J	GSFC	Winningham, J D	NGR 44-004-124	4241
13	UNIV TEXAS-DALLAS	Chappell, C R	MSFC	Hanson, W B	NAS 8-32831	4235
13	UNIV TEXAS-EL PASO	Quaide, W L	HQ-SL	Lawson, J O	NAGW 204	4247
13	UNIV OF TOLEDO	Labus, T L	LERC	Dewitt, K J	NAG 3-184	3742
13	UNIV OF VIRGINIA	Beatty, M E	LARC	Batchman, T E	NSG 1567	4421
13	UNIV OF WASHINGTON	Deyoung, R J	LARC	Christiansen, W H	NAG 1-176	4513
13	UNIV OF WASHINGTON	Chubb, D	LERC	Hertzberg, A	NAG 3-16	4518
13	UNIV WISC-MADISON	Mayr, H G	HQ-SC	Scherb, F	NGR 50-002-162	4626
13	UTAH STATE UNIV	Eiband, A M	GSFC	Banks, P M	NAS 5-24455	4288
13	UTAH STATE UNIV	Spencer, N W	GSFC	St Maurice, J P	NSG 5215	4296
13	UTAH STATE UNIV	Spencer, N W	GSFC	Foster, J C	NSG 5216	4297
13	UTAH STATE UNIV	Chappell, C R	MSFC	Banks, P M	NAS 8-34003	4293
13	UTAH STATE UNIV	Birmingham, T J	HQ-SC	Schunk, R W	NAGW 77	4285
13	UTAH STATE UNIV	Taylor, T C	HQ-SP	Torr, D G	NAGW 119	4287
13	VANDERBILT UNIVERSTY	Jalufka, N W	LARC	Lee, J H	NCC 1-8	4027
13	VIRGINIA POLY INST	Cantrell, J H	LARC	Claus, R O	NAG 1-68	4437
13	VIRGINIA POLY INST	Cantrell, J H	LARC	Claus, R O	NAG 1-192	4455
13	VIRGINIA STATE UNIV	Singh, J J	LARC	Stronach, C E	NSG 1342	4507
13	VIRGINIA STATE UNIV	Wilson, J W	LARC	Stronach, C E	NSG 1646	4508
13	WASHINGTON ST UNIV	Poppa, H R	ARC	Dickinson, J T	NCA 2-840002	4569
13	WASHINGTON ST UNIV	Poppa, H R	ARC	Dickinson, J T	NCA 2-840102	4570
13	WASHINGTON ST UNIV	Poppa, H R	ARC	Dickinson, J T	NCC 2-69	4571
13	WASHINGTON ST UNIV	Poppa, H R	ARC	Dickinson, J T	NCC 2-118	4572
13	WASHINGTON UNIVERSTY	Warner, J L	JSC	Walker, R M	NGL 26-008-065	3156
13	WASHINGTON UNIVERSTY	Heyman, J S	LARC	Miller, J G	NSG 1601	3158
13	WEBER STATE COL	Chipman, E	HQ-SC	Tripp, D A	NAGW 19	4302
13	YALE UNIVERSITY	Hoppe, J C	LARC	Chang, R K	NAG 1-37	2005
13	YORK COLLEGE-NY	Pohly, J G	HQ-LC	Spergel, M S	NSG 7454	3519
19	ARIZONA STATE UNIV	Pollack, J	ARC	Greeley, R	NSG 2284	1113
19	ATHENS STATE COLLEGE	Reaves, F A	MSFC	Workman, G L	NAS 8-32920	1009
19	ATLANTA UNIVERSITY	Goldstein, M	LERC	Owen, G S	NAG 3-113	2176
19	BOWIE STATE COLLEGE	Mundy, J	GSFC	Butler, O B	NCA 5-97	2587
19	BROOKLYN COLLEGE	Byvik, C E	LARC	Tomkiewicz, M	NAG 1-44	3296
19	CALIF INST OF TECH	Warner, J L	JSC	Ahrens, T J	NSG 9019	1306
19	CASE WESTERN RESERVE	Weigand, A J	LERC	Gibbons, D F	NAS 3-22259	3595
19	CASE WESTERN RESERVE	Smetana, J	LERC	Collins, R E	NAS 3-22342	3596

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19	CASE WESTERN RESERVE	Mirtich, M J	LERC	Wallace, J F	NSG 3279	3622
19	CHRISTPHR NEWPRT COL	Wilson, J W	LARC	Chang, C K	NSG 1614	4308
19	CLARKSON COL OF TECH	Adams, W R	MSFC	Wilcox, W R	NAS 8-34308	3311
19	COLLEGE OF WM & MARY	Mayr, H G	HQ-SC	Montgomery, D C	NSG 7416	4321
19	COLORADO STATE UNIV	Rango, A	GSFC	Boyne, H S	NAG 5-88	1886
19	COLORADO STATE UNIV	Kerslake, W R	LERC	Robinson, R S	NAG 3-43	1883
19	COLUMBIA UNIVERSITY	Smith, D E	GSFC	Johnson, T L	NGR 33-008-146	3335
19	CORNELL UNIVERSITY	Moseley, S H	GSFC	Harwit, M	NAS 5-26669	3356
19	CORNELL UNIVERSITY	Early, L J	WFC	Kelley, M C	NSG 6020	3379
19	DRAKE UNIVERSITY	Fowles, W W	MSFC	Kopicky, K J	NAS 8-33728	2438
19	HAMPTON INSTITUTE	Erickson, W D	LARC	Darden, G C	NAS 1-14832	4332
19	HARVARD UNIVERSITY	Devlin, J F	HQ-SP	Field, G B	NSG 7176	2805
19	INDIANA UNIV OF PA	Hoge, F E	WFC	Berry, R E	NCC 6-3214	3839
19	KENT STATE UNIV-KENT	Wintucky, E	LERC	Gelerinter, E	NAS 3-21945	3647
19	MASS INST OF TECH	Stephanides, C	GSFC	Shapiro, I I	NAS 5-25833	2878
19	MASS INST OF TECH	Pepper, S V	LERC	Johnson, K H	NCC 3-1	2893
19	MICHIGAN STATE UNIV	Nakanishi, S	LERC	Asmussen, J	NSG 3299	2987
19	MICHIGAN TECH UNIV	Reeves, F A	MSFC	Hellawell, A	NAS 8-33727	2990
19	MIDDLEBURY COLLEGE	Hedin, A E	HQ-SC	Wolfson, L T	NAGW 54	4304
19	NEW MEX ST U-LAS CR	Mayr, H G	HQ-SC	Theimer, O H	NSG 7622	3284
19	NO CAR A&T STATE U	Hoell, J M	LARC	Yu, C	NAG 1-82	3528
19	NORTHWESTERN UNIV	Moore, W W	MSFC	Davis, S H	NAS 8-33881	2296
19	OLD DOMINION UNIV	Fowler, W	GSFC	Becher, J	NSG 5053	4393
19	OLD DOMINION UNIV	Wilson, J W	LARC	Khandelwal, G S	NCC 1-42	4372
19	PENN STATE U-UNIV PK	Toon, O B	ARC	Anthes, R A	NGT 39-009-801	3894
19	PENN STATE U-UNIV PK	Early, L J	WFC	Mitchell, J D	NAG 6-7	3869
19	PENN STATE U-UNIV PK	Early, L J	WFC	Hale, L C	NSG 6004	3914
19	PRAIRIE VIEW A&M U	White, W L	ARC	Jackson, B N	NCA 2-598001	4046
19	PRINCETON UNIVERSITY	Hoppe, J C	LARC	Miles, R B	NAG 1-152	3211
19	RENSSELAER POLY-NY	Liu, D C	LERC	Borrego, J M	NAG 3-175	3428
19	RICE UNIVERSITY	Kosmahl, H G	LERC	Freeman, J W	NAG 3-29	4052
19	RICE UNIVERSITY	Early, L J	WFC	Anderson, H R	NAG 6-5	4053
19	RICE UNIVERSITY	Mayr, H G	HQ-SC	Bernstein, W	NAGW 69	4054
19	SAN DIEGO STATE UNIV	Fimmel, R O	ARC	Young, A T	NAG 2-92	1335
19	SAN DIEGO STATE UNIV	McKenzie, R L	ARC	Massey, G A	NAG 2-104	1336
19	STANFORD UNIVERSITY	McKenzie, R L	ARC	Baganoff, D	NAG 2-36	1391
19	STANFORD UNIVERSITY	McKenzie, R L	ARC	Harnis, S E	NAG 2-44	1393
19	STANFORD UNIVERSITY	McKenzie, R L	ARC	Hesselink, L	NAG 2-83	1396
19	STANFORD UNIVERSITY	Rubetin, M W	ARC	Ferziger, J H	NCC 2-15	1445
19	STANFORD UNIVERSITY	Ostrow, H	GSFC	MacOvski, A	NAS 5-25043	1417
19	STANFORD UNIVERSITY	Reeves, F A	MSFC	Tiller, W A	NAS 8-33110	1424
19	STANFORD UNIVERSITY	Mayr, H G	HQ-SC	Yoshimoto, S M	NGL 05-020-176	1478
19	TEXAS A&M UNIVERSITY	Stonesifer, G R	GSFC	Harlan, J C	NAS 5-24383	4096
19	TUSKEGEE INSTITUTE	Kerslake, W R	LERC	Ray, P K	NAG 3-76	1022
19	UNIV ALA-HUNTSVILLE	Ballance, J	MSFC	Wu, S T	NAS 8-33132	1043
19	UNIV ALA-HUNTSVILLE	Morgan, S H	MSFC	Wu, S T	NAS 8-33443	1046
19	UNIV ALA-HUNTSVILLE	Carey, W T	MSFC	Carter, E	NAS 8-34187	1064
19	UNIV ALA-HUNTSVILLE	Ballance, J O	MSFC	Wu, S T	NAS 8-34573	1069
19	UNIV ALA-HUNTSVILLE	Carter, C H	HQ-LC	Wu, S T	NGT 01-002-081	1070
19	UNIV ALASKA-FAIRBNKS	Early, L J	WFC	Wescott, E M	NAG 6-1	1082
19	UNIV ALASKA-FAIRBNKS	Mayr, H G	HQ-SC	Akasofu, S I	NSG 7447	1091
19	UNIV ALASKA-FAIRBNKS	Hedin, A E	HQ-SC	Swift, O W	NSG 7625	1092
19	UNIV OF ARIZONA	Hansen, Q M	ARC	Jacobs, S F	NAG 2-64	1127
19	UNIV CALIF-BERKELEY	Bauer, E H	ARC	Colwell, R N	NCC 2-54	1568
19	UNIV CALIF-BERKELEY	Early, L J	WFC	Mozer, F S	NAG 6-10	1525
19	UNIV CALIF-BERKELEY	Mayr, H G	HQ-SC	Anderson, K A	NGL 05-003-017	1575
19	UNIV CALIF-BERKELEY	Schmerling, E R	HQ-SC	Hudson, M R	NSG 7401	1601
19	UNIV CALIF-L ANGELES	Mayr, H G	HQ-SC	Holzer, R E	NAGW 74	1635



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19	UNIV CALIF-L ANGELES	Mayr, H G	HQ-SC	Stenzel, R L	NAGW 180	1641
19	UNIV CALIF-L ANGELES	Mayr, H G	HQ-SC	Kennel, C F	NGL 05-007-190	1659
19	UNIV CALIF-L ANGELES	Schmerling, E R	HQ-SC	Stenzel, R L	NSG 7616	1693
19	UNIV CALIF-SAN DIEGO	Welker, J	GSFC	Goodkind, J M	NSG 5331	1748
19	UNIV CALIF-SAN DIEGO	Mayr, H G	HQ-SC	Alfven, H	NSG 7623	1757
19	UNIV CALIF-SAN DIEGO	Quaide, W L	HQ-SL	Suess, H E	NGL 05-009-005	1735
19	UNIV CALIF-S BARBARA	Bauer, E H	ARC	Estes, J E	NCC 2-124	1794
19	UNIV CALIF-S BARBARA	Warner, J L	JSC	Fuller, M D	NSG 9020	1803
19	UNIV COLORADO-BOLDR	Fimmel, R O	ARC	Stewart, I A	NAS 2-9477	1936
19	UNIV COLORADO-BOLDR	Guidotti, J G	GSFC	Barth, C A	NSG 5103	1955
19	UNIV DIST COLUMBIA	Chappelle, E W	GSFC	Watlington, R A	NSG 5290	2099
19	UNIV OF HAWAII-MANOA	Finley, C J	HQ-ER	Berg, E	NSG 7179	2266
19	UNIV HOUSTON-HOUSTON	Carter, C H	HQ-LC	Middleditch, B S	NGT 44-005-800	4153
19	UNIV HOUSTON-HOUSTON	Schmerling, E R	HQ-SC	Sheldon, W R	NSG 7609	4162
19	UNIV ILLINOIS-URBANA	Fimmel, R O	ARC	Fox, J L	NAG 2-94	2346
19	UNIV ILLINOIS-URBANA	Early, L J	WFC	Bowhill, S A	NGR 14-005-181	2364
19	UNIV OF IOWA	Mayr, H G	HQ-SC	Shawhan, S D	NAGW 190	2466
19	UNIV OF IOWA	Mayr, H G	HQ-SC	Joyce, G	NSG 7632	2487
19	UNIV OF KANSAS	Hedin, A E	HQ-SC	Beard, D B	NAGW 71	2507
19	UNIV OF KANSAS	Mayr, H G	HQ-SC	Beard, D B	NAGW 187	2508
19	UNIV OF KANSAS	Wayr, H G	HQ-SC	Beard, D B	NAGW 217	2509
19	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Yeh, R T	NGT 21-002-805	2708
19	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Coplan, M A	NGT 21-002-810	2713
19	UNIV MARYLAND-COL PK	Schmerling, E R	HQ-SC	Wu, C S	NGL 21-002-005	2691
19	UNIV MICH-ANN ARBOR	Miller, F R	MSFC	Carignan, G R	NAS 8-31987	3037
19	UNIV MICH-ANN ARBOR	Chappell, C R	MSFC	Carignan, G R	NAS 8-32332	3038
19	UNIV MICH-ANN ARBOR	Jones, C T	MSFC	Torr, M R	NAS 8-32569	3039
19	U MINN-MNPLS-ST PAUL	Early, L J	WFC	Cahill, L J	NAG 6-11	3077
19	U MINN-MNPLS-ST PAUL	Early, L J		Cahill, L J	NSG 6021	3094
19	U MINN-MNPLS-ST PAUL	Cauffman, D P	HQ-SC	Cahill, L J	NSG 7237	3097
19	UNIV NEBRASKA-LINCLN	Liu, D C	LERC	Woollam, J A	NAG 3-154	3171
19	UNIV NEW HAMP-DURHAM	Early, L J	WFC	Arnoldy, R L	NAG 6-12	3194
19	UNIV NEW HAMP-DURHAM	Early, L J	WFC	Arnoldy, R L	NSG 6022	3206
19	UNIV OF PENNSYLVANIA	Singer, J	LERC	Worrell, W L	NSG 3300	3923
19	UNIV OF PITTSBURGH	Early, L J	WFC	Zipf, E C	NAG 6-2	3927
19	UNIV OF SANTA CLARA	Whitten, R C	ARC	McCormick, P T	NCC 2-130	1842
19	UNIV OF SOUTHERN CAL	Fimmel, R O	ARC	Kumar, S	NAG 2-95	1847
19	UNIV STHN COLORADO	Lofgren, G	JSC	Smith, R K	NSG 9051	1993
19	UNIV TEXAS-AUSTIN	Stephanides, C	GSFC	Tapley, B	NAS 5-25991	4182
19	UNIV TEXAS-AUSTIN	Finley, C J	HQ-ER	Dorman, J H	NSG 7159	4208
19	UNIV TEXAS-AUSTIN	Shirey, W H	HQ-SM	Silverberg, E C	NASW 2974	4193
19	UNIV TEXAS-DALLAS	Chappell, C R	MSFC	Hanson, W B	NAS 8-31775	4233
19	UNIV TEXAS-DALLAS	Mayr, H G	HQ-SC	Heikkila, W J	NAGW 53	4220
19	UNIV OF UTAH	Snyder, R N	WFC	Staffanson, F L	NAG 6-15	4273
19	UNIV WISC-MADISON	Fimmel, R O	ARC	Limaye, S S	NAG 2-93	4584
19	UTAH STATE UNIV	Early, L J	WFC	Williamson, P R	NSG 6027	4298
19	UTAH STATE UNIV	Mavr, H G	HQ-SC	Torr, M R	NAGW 105	4286
19	VIRGINIA POLY INST	Byvik, C E	LARC	Finklea, H O	NAG 1-89	4440
19	VIRGINIA POLY INST	Scott, J H	WFC	Powell, N L	NSG 6029	4503
19	VIRGINIA POLY INST	Scott, J H	WFC	Powell, N L	NSG 6030	4504
19	VIRGINIA POLY INST	Scott, J H	WFC	Powell, N L	NSG 6031	4505
19	WOODSHOLE OCEAN INST	Hoge, F E	WFC	Evans, G	NAS 6-3160	2975
19	YALE UNIVERSITY	Fallon, R A	MSFC	Nordine, P C	NAS 8-34383	2011
21	ALABAMA A&M UNIV	Smith, O E	MSFC	Temple, E C	NSG 8065	1005
21	ATLANTA UNIVERSITY	Fowlis, W W	MSFC	Martin, B J	NAG 8-9	2177
21	BOWIE STATE COLLEGE	Maury, J L	GSFC	Srivastava, S	NGR 21-027-004	2588
21	CLEMSON UNIV-CLEMSON	Lallman, F J	LARC	Fennell, R E	NAG 1-81	3968
21	COLLEGE OF WM & MARY	Senn, E H	LARC	Noonan, R E	NSG 1435	4318

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21	COLORADO STATE UNIV	Lomax, H	ARC	Thomas, J W	NCA 2-165001	1893
21	COOPER UNION COLLEGE	Evans, J S	LARC	Chinitz, W	NAG 1-18	3340
21	DUKE UNIVERSITY	Ford, W F	LERC	Smith, D A	NSG 3160	3526
21	EASTERN ILLINOIS U	Goorjian, P M	ARC	Dev, S K	NCA 2-207101	2277
21	HAMPTON INSTITUTE	Haigler, G W	LARC	Shan, S N	NCC 1-7	4336
21	IOWA STATE UNIV	Shoosmith, J N	LARC	Feinberg, R B	NSG 1538	2455
21	LEHIGH UNIVERSITY	Crews, J. H., Jr	LARC	Erdogan, F	NGR 39-007-011	3845
21	MISSISSIPPI STATE U	Smith, R E., Jr	LARC	Thompson, J F	NSG 1577	3116
21	MOREHOUSE COLLEGE	Campbell, W	MSFC	Bozeman, R E	NAG 8-3	2232
21	NEW YORK UNIVERSITY	Warming, R F	ARC	Harten, A	NCA 2-525101	3404
21	NEW YORK UNIVERSITY	South, J C., Jr	LARC	Garabedian, P R	NSG 1579	3408
21	NO CAR A&T STATE U	Ramapriyan, H K	GSFC	Alexander, W E	NSG 5406	3534
21	NO CAROLINA STATE U	Wilhite, A W	LARC	Perkins, J N	NCC 1-49	3549
21	OLD DOMINION UNIV	Harris, J E	LARC	Lakin, W D	NAG 1-25	4345
21	OLD DOMINION UNIV	Dagenhart, J R	LARC	Lakin, W D	NAG 1-175	4356
21	OLD DOMINION UNIV	Wornom, S F	LARC	Dorrepaal, J M	NAG 1-197	4360
21	OREGON STATE UNIV	Lomax, H	ARC	Jespersen, D C	NCA 2-586001	3792
21	PURDUE UNIVERSITY	Grenchik, T J	GSFC	Williams, T J	NAS 5-26196	2409
21	QUEENSBOROUGH COMM C	Montgomery, T D	DFRC	Scalzo, F	NAG 4-6	3422
21	RENSSELAER POLY-NY	Barker, L K	LARC	Shen, C N	NAG 1-61	3424
21	SAN JOSE STATE UNIV	Duval, R W	ARC	Wang, J C	NCC 2-83	1373
21	SOUTHERN METHODIST U	Houston, G	JSC	Gray, H L	NAS 9-16438	4080
21	UNIV CALIF-BERKELEY	Warming, R F	ARC	Majda, A	NCA 2-50101	1563
21	UNIV CALIF-BERKELEY	Carter, C H	HQ-LC	Shu, F H	NGT 05-003-800	1591
21	UNIV CALIF-L ANGELES	Goorjian, P	ARC	Osher, S	NCA 2-390002	1653
21	UNIV DIST COLUMBIA	Lefferts, E	GSFC	Bakshi, J S	NSG 5122	2097
21	UNIV OF FLORIDA	Haigler, G W	LARC	Edwards, B H	NAG 1-39	2124
21	UNIV OF GEORGIA	Toll, D	GSFC	Jensen, J R	NAS 5-26129	2235
21	UNIV ILLINOIS-URBANA	Foudriat, E C	LARC	Campbell, R H	NSG 1471	2365
21	UNIV MARYLAND-COL PK	Gevarter, W B	HQ-RE	Minker, J	NGR 21-002-270	2698
21	UNIV OF NEW ORLEANS	Lambiotte, J J., Jr	LARC	Ioup, G E	NSG 1648	2582
21	UNIV OF SOUTHERN CAL	Jaffee, R L	ARC	Segal, G A	NSG 2351	1869
21	UNIV TENNESSEE-KNOXV	Smith, R E	LARC	Baker, A J	NAG 1-32	3992
21	UNIV TEXAS-AUSTIN	Krishen, K	JSC	Griffin, C R	NAS 9-16171	4187
21	UNIV OF VIRGINIA	Bowles, R L	LARC	Brown, R L., Jr	NSG 1335	4419
21	WESTERN ILLINOIS U	Loendorf, D D	LARC	McBride, W E	NAG 1-42	2377
21	WICHITA STATE UNIV	Smith, J M	LERC	Greywall, M S	NSG 3186	2539
21	XAVIER UNIV-LA	Wood, G M	LARC	Ioup, J W	NAG 1-16	2583
22	ARIZONA STATE UNIV	Krosel, S M	LERC	Ogrady, E P	NAG 3-112	1096
22	CAL POLY ST U-S LUIS	Piazza, J E	ARC	Morgan, D E	NCA 2-678101	1313
22	COLLEGE OF WM & MARY	Harris, J L	LARC	Feyock, S	NAG 1-62	4309
22	COLLEGE OF WM & MARY	Foudriat, E C	LARC	Feyock, S	NSG 1626	4320
22	DUKE UNIVERSITY	Salley, G C	LARC	Smith, C V	NAG 1-165	3521
22	FORT LEWIS COLLEGE	Fischer, J R	GSFC	Bell, G W	NAG 5-162	1908
22	GEORGE WASHINGTON U	Speray, D E	LARC	Foley, J D	NAG 1-185	2038
22	MASS INST OF TECH	Stevens, K. G	ARC	Dennis, J B	NCA 2-425101	2889
22	MASS INST OF TECH	Shoosmith, J N	LARC	Moses, J	NSG 1323	2914
22	OLD DOMINION UNIV	Foudriat, E C	LARC	Knapper, R J	NAG 1-47	4346
22	SO UNIV & A&M COL-BR	Smith, J A	HQ-NS	Roquemore, L	NASW 3344	2579
22	STANFORD UNIVERSITY	Beam, R M	ARC	Oliger, J	NCA 2-745004	1428
22	STANFORD UNIVERSITY	Stevens, K. G	ARC	Owicki, S S	NCA 2-745102	1433
22	ST UNIV SYSTM OF FLA	Harrison, J	HQ-ET	Unavailable	NASW 3351	2119
22	TEXAS A&M UNIVERSITY	Browne, I D	JSC	Sielken, R L	NAS 9-13894	4106
22	TEXAS A&M UNIVERSITY	Browne, I D	JSC	Heilman, J	NAS 9-14689	4107
22	TEXAS A&M UNIVERSITY	Krishen, K	JSC	Jean, R	NAS 9-16403	4115
22	TUSKEGEE INSTITUTE	Barker, L K	LARC	Bales, J W	NAG 1-31	1019
22	UNIV ALA-HUNTSVILLE	Juergensen, K	MSFC	Shiva, S G	NAS 8-33096	1042
22	UNIV ALA-HUNTSVILLE	Green, J L	MSFC	Horwitz, J L	NAS 8-34534	1068

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
22	UNIV CALIF-L ANGELES	Raby, J S	ARC	Carlyle, J W	NAG 2-41	1626
22	UNIV CALIF-L ANGELES	Miller, E	LERC	Ercegovac, M D	NAG 3-132	1629
22	UNIV CALIF-S BARBARA	Carter, C H	HQ-LC	Dozier, J	NGT 05-010-801	1799
22	UNIV DIST COLUMBIA	Purves, L R	GSFC	Finley, G T	NAG 5-91	2094
22	UNIV OF GEORGIA	Harrison, J O	HQ-ET	Hale, H	NASW 3247	2236
22	UNIV ILLINOIS-URBANA	Schaefer, D H	GSFC	Slotnick, D L	NAS 5-26405	2360
22	UNIV ILLINOIS-URBANA	Senn, E H	LARC	Campbell, R H	NAG 1-138	2345
22	UNIV OF IOWA	Lupton, A O	LARC	Reddy, S M	NAG 1-195	2460
22	UNIV OF KENTUCKY	Harrison, J O	HQ-ET	Hackbarth, M	NASW 3367	2550
22	UNIV OF LOUISVILLE	Isley, W	GSFC	Shelton, R D	NAS 5-26504	2557
22	UNIV OF MAINE-ORONO	Imhoff, M	GSFC	Byther, T	NAS 5-26574	2585
22	UNIV MARYLAND-COL PK	Maury, J	GSFC	Rieger, C J	NAG 5-99	2644
22	UNIV MARYLAND-COL PK	Dalton, J T	GSFC	Agrawala, A K	NAS 5-26649	2675
22	UNIV MARYLAND-COL PK	Barker, L K	LARC	Minker, J	NAG 1-51	2634
22	UNIV MARYLAND-COL PK	Gevarter, W B	HQ-RT	Reiger, C J	NSG 7253	2733
22	UNIV OF MASS-AMHERST	Senn, E H	LARC	Wileden, J C	NAG 1-115	2953
22	UNIV OF PITTSBURGH	Ault, L	HQ-ET	McWilliams, P A	NASW 3403	3931
22	UNIV OF SANTA CLARA	Jones, H W, Jr	ARC	Danielsen, R L	NCA 2-685102	1834
22	UNIV TEXAS-AUSTIN	Schiess, J R	LARC	Cline, A K	NAG 1-79	4169
22	UNIV TEXAS-AUSTIN	Shipman, F S	LARC	Browne, J C	NSG 1446	4199
22	UNIV TEXAS-AUSTIN	Will, R W	LARC	Browne, J C	NSG 1479	4200
22	UNIV OF TOLEDO	Schulte, R R	LERC	Solarek, D J	NAG 3-123	3740
22	VIRGINIA POLY INST	Edge, J T	JSC	Nehl, T W	NAS 9-16281	4476
31	ALCORN STATE UNIV	Grebowsky, J	GSFC	Paul, M P	NGR 25-012-001	3099
31	ARIZONA STATE UNIV	Alexander, M B	MSFC	Logan, E, Jr	NAS 8-32357	1107
31	ARIZONA STATE UNIV	Alexander, M B	MSFC	Logan, E, Jr	NAS 8-34318	1109
31	ARIZONA STATE UNIV	Boyce, J M	HQ-SL	Grecley, R	NSG 7548	1119
31	AUGSBURG COLLEGE	Spencer, N W	GSFC	Engebretson, M J	NSG 5285	3067
31	BOSTON UNIVERSITY	Guynes, B V	MSFC	Mendillo, M	NAS 8-32844	2754
31	BROWN UNIVERSITY	Oseroff, H	GSFC	Hermance, J F	NAS 5-26138	3951
31	CALIF INST OF TECH	Patterson, G	GSFC	Ingersoll, A P	NAS 5-22965	1260
31	CALIF INST OF TECH	Hansen, J E	GSFC	Yung, Y L	NSG 5301	1292
31	CALIF INST OF TECH	Donley, J L	GSFC	Zirin, H	NSG 5314	1293
31	CALIF INST OF TECH	Donley, J L	GSFC	Zirin, H	NSG 5327	1294
31	CALIF INST OF TECH	McDougal, D S	LARC	Seinfeld, J H	NAG 1-71	1230
31	CALIF INST OF TECH	Murphy, R E	HQ-SL	Ingersoll, A P	NAGW 58	1247
31	CALIF INST OF TECH	Murphy, R E	HQ-SL	Farmer, C B	NAGW 223	1256
31	CALIF INST OF TECH	Murphy, R E	HQ-SL	Yung, Y L	NSG 7376	1301
31	CAL STATE U-FULLERTN	Murphy, R E	HQ-SL	Ryan, J A	NSG 7614	1320
31	CAL STATE U-NRTHRDGE	Wende, C	GSFC	Martin, S F	NSG 5324	1328
31	CAL STATE U-NRTHRDGE	Wende, C	GSFC	Chapman, G A	NSG 5330	1329
31	CAL STATE U-NRTHRDGE	Wende, C	GSFC	Chapman, G A	NSG 5333	1330
31	CITY COLLEGE OF N Y	Hansen, J E	GSFC	Spar, J	NGR 33-013-086	3306
31	CLEMSON UNIV-CLEMSON	Rodgers, E B	GSFC	Gentry, R C	NSG 5349	3974
31	CLEMSON UNIV-CLEMSON	Wexler, R	GSFC	Gentry, R C	NSG 5350	3975
31	COLLEGE OF WM & MARY	Sullivan, E M	LARC	Rinsland, C P	NCC 1-3	4313
31	COLLEGE OF WM & MARY	Sullivan, E M	LARC	Rinsland, C P	NCC 1-16	4314
31	COLLEGE OF WM & MARY	Sullivan, E M	LARC	Rinsland, C P	NCC 1-43	4316
31	COLORADO STATE UNIV	King, M D	GSFC	McKee, T B	NAG 5-58	1885
31	COLORADO STATE UNIV	Shukla, J	GSFC	Stevens, D E	NAG 5-136	1887
31	COLORADO STATE UNIV	Heymsfield, G M	GSFC	Cotton, W R	NSG 5341	1903
31	COLORADO STATE UNIV	Curran, R J	GSFC	Cox, S K	NSG 5357	1905
31	COLORADO STATE UNIV	Harrison, E F	LARC	Vonderhaar, T H	NAS 1-15580	1890
31	COLORADO STATE UNIV	Hall, J B	LARC	Vonderhaar, T H	NAS 1-16465	1891
31	COLUMBIA UNIVERSITY	Oseroff, H	GSFC	Labreque, J	NAS 5-25891	3323
31	COLUMBIA UNIVERSITY	Travis, L	GSFC	Broecker, W S	NCC 5-16	3332
31	COLUMBIA UNIVERSITY	Leroy, B	LERC	Stern, T E	NAS 5-25759	3322
31	COLUMBIA UNIVERSITY	West, G S	MSFC	Balachandran, N K	NAS 8-33378	3327

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31	CORNELL UNIVERSITY	Pollack, J B.	ARC	Burns, J A	NCA 2-175001	3358
31	CORNELL UNIVERSITY	Murphy, R E	HQ-SL	Sagan, C	NGL 33-010-082	3361
31	CORNELL UNIVERSITY	Murphy, R E	HQ-SL	Gierasch, P J	NGL 33-010-186	3363
31	CORNELL UNIVERSITY	Quaide, W	HQ-SL	Burns, J A	NSG 7445	3383
31	CORNELL UNIVERSITY	Murphy, R E	HQ-SL	Gierasch, P J	NSG 7612	3392
31	DREXEL UNIVERSITY	Farlow, N H	ARC	Friend, J P	NAG 2-10	3820
31	DREXEL UNIVERSITY	Fuller, W. H	LARC	Friend, J P	NAG 1-200	3818
31	DREXEL UNIVERSITY	Fuller, W H	LARC	Friend, J P	NAGW 84	3825
31	DREXEL UNIVERSITY	Russell, J M , III	LARC	House, F B	NAS 1-14393	3826
31	DREXEL UNIVERSITY	Hall, J B	LARC	House, F B	NAS 1-16428	3827
31	DREXEL UNIVERSITY	Allario, F	LARC	Abbas, M M	NCC 1-33	3831
31	DREXEL UNIVERSITY	Schaefer, D A	MSFC	Lord, A E	NAS 8-33372	3829
31	DREXEL UNIVERSITY	Holland, A C	WFC	Bandy, A R	NSG 6007	3836
31	DUKE UNIVERSITY	Watson, R T	HQ-EB	Delucia, F C	NSG 7540	3527
31	EMMANUAL COL-MASS	Spencer, N W	GSFC	Basu, S	NSG 5419	2768
31	FLORIDA STATE UNIV	Susskind, J	GSFC	Krishnamurti, T N	NAG 5-6	2109
31	FLORIDA STATE UNIV	Watson, R T	HQ-EB	Hunt, R H	NASW 3522	2111
31	FLORIDA STATE UNIV	Watson, R T	HQ-EB	Hunt, R H	NSG 7473	2115
31	FLORIDA STATE UNIV	Murphy, R E	HQ-SL	Hess, S L	NSG 7629	2116
31	FURMAN UNIVERSITY	Mayr, H G	GSFC	Porter, H S	NAG 5-97	3976
31	GEORGE WASHINGTON U	Callis, L B	LARC	Liebowitz, H	NCC 1-19	2046
31	GEORGE WASHINGTON U	Callis, L B	LARC	Liebowitz, H	NCC 1-39	2050
31	GEORGE WASHINGTON U	Smith, G L	LARC	Liebowitz, H	NSG 1555	2058
31	GEORGIA INST OF TECH	Young, R E	ARC	Alyea, F N	NCC 2-9	2215
31	GEORGIA INST OF TECH	Ragent, B	ARC	Grams, G W	NSG 2306	2221
31	GEORGIA INST OF TECH	Page, W. A	ARC	Grams, G W	NSG 2363	2224
31	GEORGIA INST OF TECH	Levine, D M	GSFC	Saxena, S K	NAS 5-24148	2204
31	GEORGIA INST OF TECH	Reber, C A	GSFC	Cunnold, D M	NAS 5-26304	2206
31	GEORGIA INST OF TECH	Levine, D M	GSFC	Wilson, B J	NAS 5-26586	2208
31	GEORGIA INST OF TECH	Browell, E V	LARC	Davis, D D	NAG 1-50	2185
31	GEORGIA INST OF TECH	Reichle, H G	LARC	Chameides, W L	NAG 1-85	2186
31	GEORGIA INST OF TECH	Harris, R C	LARC	Black, M S	NAG 1-167	2188
31	GEORGIA INST OF TECH	Lawrence, G F	LARC	Zimmer, R P	NAS 1-14351	2196
31	GEORGIA INST OF TECH	McMaster, L R	LARC	Grams, G W.	NAS 1-16356	2200
31	GEORGIA INST OF TECH	McMaster, L R	LARC	Cunnold, D M	NAS 1-16357	2201
31	GEORGIA INST OF TECH	McMaster, L R	LARC	Grams, G W	NSG 1493	2219
31	GEORGIA INST OF TECH	Master, L R	LARC	Cunnold, D M	NSG 1643	2220
31	GEORGIA INST OF TECH	Bozek, J M	LERC	Combes, R S	NAG 3-195	2195
31	GEORGIA INST OF TECH	Murphy, R E	HQ-SL	Edwards, H D	NGL 11-002-004	2218
31	HAMPTON INSTITUTE	Young, G R	LARC	Venable, D D	NAG 1-87	4329
31	HARVARD UNIVERSITY	Donley, J L	GSFC	Reeves, E M	NAS 5-23494	2780
31	HARVARD UNIVERSITY	Bullock, G D	GSFC	McElroy, M B	NAS 5-24134	2781
31	HARVARD UNIVERSITY	Sing, M L	GSFC	Parkinson, W H	NAS 5-26557	2783
31	HARVARD UNIVERSITY	Fishman, J	LARC	McElroy, M B	NAG 1-55	2769
31	HARVARD UNIVERSITY	Ballance, C W	WFC	Anderson, J G	NAS 6-3061	2784
31	HARVARD UNIVERSITY	Seals, R K	HQ-EB	Anderson, J G	NASW 3242	2789
31	HARVARD UNIVERSITY	Chandra, S	HQ-EB	McElroy, M B	NSG 2031	2798
31	HARVARD UNIVERSITY	Boggess, N. W	HQ-SC	Parkinson, W H	NSG 7304	2806
31	HARVARD UNIVERSITY	Murphy, R E	HQ-SL	Goody, R M	NGL 22-007-228	2794
31	HARVARD UNIVERSITY	Murphy, R. E.	HQ-SL	Pipkin, F M	NSG 7095	2804
31	HOUSTON BAPTIST UNIV	Robbins, D E	JSC	Warren, D C	NAG 9-13	4041
31	IOWA STATE UNIV	Pollack, J B	ARC	Dev, S K	NCA 2-340002	2447
31	IOWA STATE UNIV	Shukla, J	GSFC	Chen, T C	NAG 5-104	2442
31	IOWA STATE UNIV	Halem, M	GSFC	Chen, T	NSG 5339	2458
31	JACKSON STATE UNIV	Miller, G E	GSFC	Perkins, J	NAG 5-158	3101
31	JOHNS HOPKINS UNIV	Susskind, J	GSFC	Phillips, O M	NAG 5-200	2597
31	JOHNS HOPKINS UNIV	Bullock, G D	GSFC	Doering, J P	NAS 5-11415	2600
31	KANSAS STATE UNIV	Pitts, D E	JSC	Kanemasu, E T	NAS 9-14899	2489

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31	KANSAS STATE UNIV	Murphy, R E	HQ-SL	Williams, D	NGL 17-001-026	2490
31	KEARNEY STATE COL	Patterson, A E	JSC	Glasser, M E	NAS 9-16162	3168
31	LA ST U&A&M COL-BRGE	Murphy, R E	HQ-SL	Henry, J W	NAGW 48	2569
31	MASS INST OF TECH	Whitten, R C	ARC	Prinn, R G	NSG 2010	2919
31	MASS INST OF TECH	Susskind, J	GSFC	Staelin, D H	NAG 5-10	2841
31	MASS INST OF TECH	Shukla, J	GSFC	Eagleson, P S	NAG 5-134	2848
31	MASS INST OF TECH	Shukla, J	GSFC	Frankignoul, C	NAG 5-137	2849
31	MASS INST OF TECH	Halem, M	GSFC	Charney, J	NGR 22-009-727	2908
31	MASS INST OF TECH	Hansen, J E	GSFC	Stone, P H	NSG 5113	2934
31	MASS INST OF TECH	Halem, M	GSFC	Charney, J G	NSG 5166	2935
31	MASS INST OF TECH	Reichle, H G	LARC	Newell, R E	NAG 1-92	2816
31	MASS INST OF TECH	McMaster, L R	LARC	Cunnold, D M	NAS 1-14932	2867
31	MASS INST OF TECH	Stokes, J W	MSFC	Miller, R H	NAS 8-34501	2885
31	MASS INST OF TECH	Murphy, R E	HQ-SL	Elliot, J E	NAGW 68	2860
31	MASS INST OF TECH	Murphy, R E	HQ-SL	Lewis, J S	NGL 22-009-521	2899
31	MASS INST OF TECH	French, B M	HQ-SL	McCord, T	NSG 7638	2947
31	MORGAN STATE UNIV	Laughlin, C R	GSFC	Knox, N	NAG 5-14	2626
31	MORGAN STATE UNIV	Duncan, C H	GSFC	Oliver, F W	NSG 5401	2630
31	MURRAY STATE U-KY	Atwell, B H	NSTL	Weber, N	NAS13-111	2544
31	NEW MEX INST MINING	Vaughan, O H	MSFC	Brooks, M	NAS 8-33817	3269
31	NEW YORK UNIVERSITY	Halem, M	GSFC	Isaacson, E	NSG 5034	3410
31	NEW YORK UNIVERSITY	Halem, M	GSFC	Ghil, M	NSG 5130	3411
31	NEW YORK UNIVERSITY	Murphy, R E	HQ-SL	Hoffert, M I	NSG 7591	3413
31	NO CAROLINA STATE U	Heppner, J P	GSFC	Manring, E R	NAS 5-26510	3544
31	OHIO STATE UNIV	Watson, R T	HQ-EB	Nordstrom, R J	NAGW 31	3665
31	OHIO STATE UNIV	Chandra, S	HQ-EB	Shaw, J H	NSG 7479	3694
31	OHIO STATE UNIV	Tilford, S G	HQ-SC	Seliga, T A	NASW 3149	3671
31	OKLAHOMA STATE UNIV	Vitale, J A	HQ-ET	Walsh, S	NSG 7640	3772
31	OLD DOMINION UNIV	Young, G R	LARC	Tiwari, S N	NAG 1-21	4344
31	OLD DOMINION UNIV	Reichle, H G, Jr	LARC	Kindle, E C	NCC 1-2	4365
31	OLD DOMINION UNIV	Browell, E V	LARC	Kindle, E C	NCC 1-28	4368
31	OLD DOMINION UNIV	Levine, J S	LARC	Tiwari, S N	NCC 1-30	4369
31	OREGON GRADUATE CTR	Reichle, H G	LARC	Rasmussen, R A	NAG 1-160	3784
31	OREGON GRADUATE CTR	Watson, R T	HQ-EB	Rasmussen, R A	NSG 7457	3787
31	OREGON STATE UNIV	Shukla, J	GSFC	Deardorff, J W	NAG 5-51	3789
31	OREGON STATE UNIV	Shukla, J	GSFC	Gates, W L	NAG 5-206	3790
31	OREGON STATE UNIV	Halem, M	GSFC	Esbensen, S	NSG 5308	3796
31	OREGON STATE UNIV	Adler, R F	GSFC	Decker, F W	NSG 5343	3797
31	OREGON STATE UNIV	Halem, M	GSFC	Gates, W L	NSG 5353	3798
31	PENN STATE U-UNIV PK	Oseroff, H	GSFC	Carlson, T N	NAS 5-26456	3875
31	PENN STATE U-UNIV PK	Reed, E I	GSFC	Nesbit, J F	NAS 5-26545	3877
31	PENN STATE U-UNIV PK	Uccellini, L W	GSFC	Anthes, R A	NSG 5205	3911
31	PENN STATE U-UNIV PK	Greaves, J	GSFC	Clark, J H	NSG 5347	3913
31	PENN STATE U-UNIV PK	Kaufman, J W	MSFC	Clark, J H	NAS 8-33794	3881
31	PENN STATE U-UNIV PK	Fichtl, G H	MSFC	Clark, J H	NAS 8-33797	3882
31	PENN STATE U-UNIV PK	Duke, J R	WFC	Olivero, J	NAS 6-2726	3880
31	PENN STATE U-UNIV PK	Murphy, R E	HQ-SL	Herman, R M	NAGW 127	3871
31	POLY INST OF NY	Spencer, N W	GSFC	Gross, S H	NSG 5284	3420
31	PRINCETON UNIVERSITY	Carter, C H	HQ-LC	Bryan, K	NGT 31-001-800	3237
31	PURDUE UNIVERSITY	Curran, R J	GSFC	Avies, R D	NAG 5-101	2405
31	PURDUE UNIVERSITY	Shukla, T	GSFC	Davies, R	NAG 5-106	2406
31	PURDUE UNIVERSITY	Fichtl, G H	MSFC	Smith, P J	NAS 8-34009	2412
31	RENSSELAER POLY-NY	Yates, I C	MSFC	Wu, S T	NAS 8-33562	3438
31	RENSSELAER POLY-NY	Gevarter, W B	HQ-RT	Yerazunis, S W	NASW 3279	3439
31	RICE UNIVERSITY	Teegarden, B	GSFC	Haymes, R C	NAS 5-25032	4059
31	RICE UNIVERSITY	Spencer, N W	GSFC	Reiff, P H	NSG 5286	4071
31	RICE UNIVERSITY	Arndt, G D	JSC	Gordon, W E	NAS 9-16428	4066
31	RICE UNIVERSITY	Vaughan, W W	MSFC	Few, A A	NAS 8-33715	4062

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31	RICE UNIVERSITY	Quaide, W L	HQ-SL	Michel, F C	NSG 7032	4073
31	RICE UNIVERSITY	Murphy, R E	HQ-SL	Chamberlain, J W	NSG 7043	4074
31	RICE UNIVERSITY	Murphy, R E	HQ-SL	Stebbins, R F	NSG 7386	4077
31	ST LOUIS UNIVERSITY	Hill, K	MSFC	Fuelburg, H E	NAS 8-33370	3123
31	SAN DIEGO STATE UNIV	Murphy, R E	HQ-SL	Young, L	NAGW 184	1338
31	SAN JOSE STATE UNIV	Whitten, R C.	ARC	Riegel, C A	NCA 2-675007	1353
31	SAN JOSE STATE UNIV	Whitten, R C	ARC	Riegel, C A	NCC 2-68	1369
31	SAN JOSE STATE UNIV	Danielsen, E F	ARC	Riegel, C A	NCC 2-73	1371
31	SAN JOSE STATE UNIV	Pollack, J B	ARC	Ackerman, T P	NCC 2-132	1377
31	SO UNIV & A&M COL-BR	O'Neal, R L	LARC	Scott, R L	NAS 1-15335	2578
31	STANFORD UNIVERSITY	Halem, M	GSFC	Spreiter, J R	NSG 5254	1499
31	STANFORD UNIVERSITY	Guynes, B V	MSFC	Darosa, A V	NAS 8-32852	1423
31	STANFORD UNIVERSITY	Decher, R	MSFC	Everitt, C W	NAS 8-33796	1425
31	STANFORD UNIVERSITY	Mayr, H G	HQ-SC	Banks, P M	NAGW 235	1413
31	STANFORD UNIVERSITY	Murphy, R E	HQ-SL	Eshleman, V R	NGL 05-020-014	1477
31	STATE UNIV NY-ALBANY	Page, W A	ARC	Lazrus, A L	NSG 2386	3460
31	STATE UNIV NY-ALBANY	Whitehead, V	JSC	Duggin, M J	NAS 9-16331	3458
31	STATE UNIV NY-ALBANY	Holdeman, J D	LERC	Falconer, P	NSG 3138	3462
31	STATE UNIV NY-ALBANY	Chrstian, H J	MSFC	Orville, R E	NAS 8-33380	3454
31	STATE UNIV NY-ALBANY	Murphy, R E	HQ-SL	Weinberg, J L	NSG 7093	3463
31	ST U NY COL-PURCHASE	Halem, M	GSFC	Tenenbaum, J	NSG 5077	3508
31	STATE U NY-STONY BRK	Chang, S	ARC	Owens, T	NCA 2-760101	3486
31	STATE U NY-STONY BRK	Stewart, R W	GSFC	Hogan, J S	NCC 5-7	3488
31	STATE U NY-STONY BRK	Hansen, J E	GSFC	Owen, T	NCC 5-23	3489
31	STATE U NY-STONY BRK	Hansen, J E	GSFC	Owen, T	NGR 33-015-165	3493
31	STATE U NY-STONY BRK	Hall, J B	LARC	Cess, R D	NAS 1-16444	3481
31	STATE U NY-STONY BRK	Murphy, R E	HQ-SL	Varanasi, P	NGR 33-015-139	3491
31	TEXAS A&M UNIVERSITY	Schmugge, T J	GSFC	McFarland, M J	NSG 5193	4131
31	TEXAS A&M UNIVERSITY	Krishen, K	JSC	Jean, B R	NAS 9-16102	4111
31	TEXAS A&M UNIVERSITY	Hill, C K	MSFC	Scoggins, J R	NAS 8-31773	4099
31	TEXAS A&M UNIVERSITY	Turner, R E	MSFC	Scoggins, J R	NAS 8-33776	4102
31	TEXAS A&M UNIVERSITY	Turner, R E	MSFC	Scoggins, J R	NAS 8-34133	4103
31	TEXAS A&M UNIVERSITY	Turner, R E	MSFC	Scoggins, J R	NAS 8-34532	4104
31	TEXAS A&M UNIVERSITY	Murphy, R. E	HQ-SL	Kattawar, G W	NGR 44-001-117	4124
31	UNIV ALA-HUNTSVILLE	Hagyard, D J.	MSFC	Krall, K R	NAS 8-33525	1047
31	UNIV ALA-HUNTSVILLE	Tandberghanssen, E	MSFC	Wu, S T	NAS 8-33526	1048
31	UNIV ALA-HUNTSVILLE	Decher, R	MSFC	Karr, G R	NAS 8-33809	1053
31	UNIV ALA-HUNTSVILLE	Owen, R B	MSFC	Riley, C	NAS 8-33812	1056
31	UNIV ALA-HUNTSVILLE	Fishman, G J	MSFC	Wilson, R R	NAS 8-34137	1063
31	UNIV ALA-HUNTSVILLE	Ise, R	MSFC	Carter, E A	NAS 8-34365	1066
31	UNIV ALA-UNIVERSITY	Peters, P N	MSFC	Bertsch, W	NAS 8-33507	1078
31	UNIV ALASKA-FAIRBNKS	Gray, J W	WFC	Brown, N B	NAS 6-3065	1085
31	UNIV OF ARIZONA	Murphy, J P	ARC	Hunten, D M	NAG 2-119	1128
31	UNIV OF ARIZONA	Fimmel, R O	ARC	Hunten, D M	NAS 2-9487	1161
31	UNIV OF ARIZONA	Spencer, N W.	GSFC	Tomasko, M G	NAG 5-76	1135
31	UNIV OF ARIZONA	Wolfe, C L	GSFC	Hill, H A	NAG 5-143	1137
31	UNIV OF ARIZONA	Sours, W T	GSFC	Smith, B A	NAS 5-25484	1165
31	UNIV OF ARIZONA	Le Vine, D M	GSFC	Ragsdell, K M	NSG 5023	1197
31	UNIV OF ARIZONA	Jaffers, W	KSC	Krider, E P	NAS10-8518	1180
31	UNIV OF ARIZONA	Dietz, W R	KSC	Krider, E P	NAS10-10082	1181
31	UNIV OF ARIZONA	McCormick, M P	LARC	Herman, B M	NAS 1-14332	1158
31	UNIV OF ARIZONA	McMaster, L R	LARC	Herman, B M	NAS 1-14928	1159
31	UNIV OF ARIZONA	Fowls, W W	MSFC	Gall, R L	NAS 8-33815	1175
31	UNIV OF ARIZONA	Watson, R T	HQ-EB	Hunton, D M	NSG 7485	1214
31	UNIV OF ARIZONA	Brntton, H C	HQ-SL	Sil, G T	NAGW 67	1147
31	UNIV OF ARIZONA	Murphy, R E	HQ-SL	Hunten, D M	NAGW 149	1152
31	UNIV OF ARIZONA	Fellows, R F.	HQ-SL	Hoenig, S A	NGL 03-002-019	1185
31	UNIV OF ARIZONA	Murphy, R E	HQ-SL	Hunten, D M	NSG 7558	1217

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
31	UNIV OF ARIZONA	Murphy, R E	HQ-SL	Tomasko, M G	NSG 7573	1218
31	UNIV ARKANSAS-FAYETV	Smith, O E	MSFC	Tubbs, J D	NAS 8-33224	1227
31	UNIV ARKANSAS-FAYETV	Smith, O E	MSFC	Tubbs, J D	NAS 8-34502	1228
31	UNIV CALIF-BERKELEY	Spencer, N W	GSFC	Bowyer, S	NAG 5-139	1523
31	UNIV CALIF-BERKELEY	Fellows, R F	HQ-SL	Pimental, G C	NGL 05-003-286	1577
31	UNIV CALIF-IRVINE	Watson, R T	HQ-EB	Molina, M J	NSG 7208	1623
31	UNIV CALIF-L ANGELES	Fimmel, R O	ARC	Russell, C T	NAS 2-9491	1644
31	UNIV CALIF-L ANGELES	Ehernberger, L J	DFRC	Wurtele, M G	NSG 4024	1675
31	UNIV CALIF-L ANGELES	Halem, M	GSFC	Suarez, J	NGR 05-007-328	1664
31	UNIV CALIF-L ANGELES	Reed, E I	GSFC	Thorne, R M	NSG 5190	1677
31	UNIV CALIF-L ANGELES	Woods, D C	LARC	Friedlander, S K	NAS 1-16674	1642
31	UNIV CALIF-L ANGELES	Murphy, R E	HQ-SL	Siscoe, G L	NAGW 87	1638
31	UNIV CALIF-L ANGELES	Murphy, R E	HQ-SL	Schubert, G	NSG 7164	1684
31	UNIV CALIF-L ANGELES	Murphy, R E	HQ-SL	Allen, L H	NSG 7239	1685
31	UNIV CALIF-L ANGELES	Brinton, H C	HQ-SL	Coleman, P J	NSG 7295	1686
31	UNIV CALIF-SAN DIEGO	Shukla, J	GSFC	Roads, J O	NAG 5-105	1701
31	UNIV CALIF-SAN DIEGO	Wende, C	GSFC	Hudson, H S	NSG 5321	1746
31	UNIV CALIF-SAN DIEGO	Wende, C	GSFC	Hudson, H S	NSG 5322	1747
31	UNIV CALIF-SAN DIEGO	Sullivan, E M	LARC	Cicerone, R J	NAG 1-77	1697
31	UNIV CALIF-SAN DIEGO	Chappell, C R	MSFC	Canfield, R C	NAS 8-33795	1725
31	UNIV CALIF-SAN DIEGO	Watson, R T	HQ-EB	Cicerone, R J	NAGW 45	1711
31	UNIV CALIF-SAN DIEGO	Murphy, R E	HQ-SL	Whipple, E C	NAGW 225	1716
31	UNIV OF CENTRAL FLA	Knott, W M	KSC	Hudson, G M	NAS10-9897	2123
31	UNIV OF CENTRAL FLA	Smith, O E	MSFC	Somerville, P N	NAS 8-33071	2121
31	UNIV OF CHICAGO	Rivas, E	GSFC	Kuo, H L	NAG 5-129	2305
31	UNIV OF CHICAGO	Corrigan, J P	GSFC	Meyer, P	NAS 5-26680	2314
31	UNIV OF CHICAGO	Adler, R F	GSFC	Srivastava, R C	NSG 5402	2334
31	UNIV OF CHICAGO	Guynes, B V	MSFC	Meyer, P	NAS 8-32828	2315
31	UNIV OF CHICAGO	Dodge, J C	HQ-EB	Fujita, T T	NGR 14-001-008	2327
31	UNIV OF CHICAGO	Gilman, D A	HQ-SC	Muller, D	NSG 7464	2337
31	UNIV COLORADO-BOLDR	Carsey, F D	GSFC	Barry, R G	NAG 5-142	1919
31	UNIV COLORADO-BOLDR	Bullock, G D	GSFC	Barth, C	NAS 5-11405	1937
31	UNIV COLORADO-BOLDR	Browne, W H	GSFC	Mount, G H	NAS 5-26170	1942
31	UNIV COLORADO-BOLDR	Browne, W H	GSFC	Rottman, G J	NAS 5-26172	1943
31	UNIV COLORADO-BOLDR	Reber, C A	GSFC	London, J	NAS 5-26303	1944
31	UNIV COLORADO-BOLDR	Reber, C A	GSFC	London, J	NSG 5153	1956
31	UNIV COLORADO-BOLDR	Wende, C	GSFC	Gebbie, K B	NSG 5318	1960
31	UNIV COLORADO-BOLDR	Reed, E I	GSFC	Rusch, D W	NSG 5372	1962
31	UNIV COLORADO-BOLDR	Watson, R T	HQ-EB	Thomas, R J	NSG 7231	1964
31	UNIV COLORADO-BOLDR	Watson, R T	HQ-EB	Barth, C A	NSG 7559	1970
31	UNIV COLORADO-BOLDR	Murphy, R E	HQ-SL	Hord, C W	NAGW 197	1934
31	UNIV COLORADO-BOLDR	Murphy, R E	HQ-SL	Hord, C W	NGL 06-003-052	1950
31	UNIV COLORADO-BOLDR	Brinton, H C	HQ-SL	Barth, C A	NGR 06-003-127	1953
31	UNIV OF CONNECTICUT	Halem, M	GSFC	Bock, P	NSG 5075	2000
31	UNIV OF CONNECTICUT	Halem, M	GSFC	Lin, J D	NSG 5346	2001
31	UNIV OF DAYTON	Camp, D W	MSFC	Luers, J K	NAS 8-33369	3734
31	UNIV OF DAYTON	Schmidlin, F J	WFC	Luers, J K	NAS 6-3086	3733
31	UNIV OF DELAWARE	Shukla, J	GSFC	Willmott, C J	NAG 5-107	2019
31	UNIV OF DENVER	Munoz, R M	ARC	Murcray, D G	NAS 2-10158	1980
31	UNIV OF DENVER	Goad, J H	LARC	Goldman, A	NAG 1-56	1975
31	UNIV OF DENVER	Goad, J H	LARC	Murcray, D G	NAG 1-57	1976
31	UNIV OF DENVER	McMaster, L R	LARC	Murcray, D G	NAS 1-14929	1978
31	UNIV OF DENVER	McMaster, L R	LARC	Murcray, D G	NAS 1-16306	1979
31	UNIV OF DENVER	Seals, R K, Jr	LARC	Goldman, A	NCC 1-48	1987
31	UNIV OF DENVER	Goad, J H, Jr	LARC	Goldman, A	NSG 1405	1988
31	UNIV DIST COLUMBIA	Curran, R J	GSFC	Dhuria, H	NAG 5-75	2093
31	UNIV OF FLORIDA	Wilhelmi, A J	ARC	Lanzerotti, L J	NAS 2-9976	2134
31	UNIV OF FLORIDA	Stonesifer, G R	GSFC	Allen, L H	NAS 5-26453	2138

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31	UNIV OF FLORIDA	Horn, F W	KSC	Martsof, J D	NAS10-9611	2139
31	UNIV OF FLORIDA	Horn, F W	KSC	Martsof, J D	NAS10-9876	2141
31	UNIV OF FLORIDA	Horn, F W , Jr	KSC	Martsof, J D	NAS10-9892	2142
31	UNIV OF FLORIDA	Dietz, W R	KSC	Uman, M A	NGR 10-005-169	2148
31	UNIV OF FLORIDA	Brinton, H C	HQ-SL	Weinberg, J L	NAGW 126	2131
31	UNIV OF FLORIDA	Brinton, H C	HQ-SL	Green, A S	NGL 10-005-008	2147
31	UNIV OF HAWAII-MANOA	Wende, C	GSFC	Jefferies, J T	NSG 5317	2264
31	UNIV OF HAWAII-MANOA	Donley, J L	GSFC	Orrall, F Q	NSG 5326	2265
31	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	McCord, T B	NSG 7590	2272
31	UNIV HOUSTON-HOUSTON	Boyce, J M	HQ-SL	Smith, R S	NAGW 39	4142
31	UNIV HOUSTON-CL LAKE	Clark, J	MSFC	Samfield, E	DEN 8-1	4165
31	UNIV ILLINOIS-URBANA	Rodgers, E B	GSFC	Kidder, S Q	NAG 5-132	2352
31	UNIV ILLINOIS-URBANA	Wende, C	GSFC	Mouschovias, T C	NSG 5319	2373
31	UNIV ILLINOIS-URBANA	Watson, R T	HQ-EB	Bowhill, S A	NSG 7506	2375
31	UNIV OF IOWA	Wende, C D	GSFC	Calvert, W	NAG 5-153	2465
31	UNIV OF IOWA	Corrigan, J P	GSFC	Frank, L A	NAS 5-26257	2478
31	UNIV OF IOWA	Guynes, B V	MSFC	Shawhan, S D	NAS 8-32807	2480
31	UNIV OF KANSAS	Paris, J F	JSC	Ulaby, F T	NAS 9-15421	2513
31	UNIV OF KENTUCKY	Reichle, H G , Jr	LARC	Peters, L K	NSG 1424	2551
31	UNIV OF KENTUCKY	Reichle, H G , Jr	LARC	Peters, L K	NSG 1501	2552
31	UNIV MARYLAND-COL PK	Page, W A	ARC	Zoller, W H	NAG 2-28	2636
31	UNIV MARYLAND-COL PK	Halem, M	GSFC	Baer, F	NAG 5-26	2639
31	UNIV MARYLAND-COL PK	Wende, C	GSFC	Schmadl, E J	NAG 5-29	2640
31	UNIV MARYLAND-COL PK	Friskey, J L	GSFC	Currie, D G	NAG 5-90	2643
31	UNIV MARYLAND-COL PK	Ramapriyan, H K	GSFC	Kanal, L N	NAG 5-154	2647
31	UNIV MARYLAND-COL PK	Fraser, R S	GSFC	Baer, F	NAG 5-203	2649
31	UNIV MARYLAND-COL PK	Sours, W. T	GSFC	Currie, D G	NAS 5-25486	2666
31	UNIV MARYLAND-COL PK	Neil, E A	GSFC	Gal-chen, T	NAS 5-26463	2672
31	UNIV MARYLAND-COL PK	Langel, R A	GSFC	Trasco, J D	NGL 21-002-033	2692
31	UNIV MARYLAND-COL PK	Hartle, R E	GSFC	Matthews, D L	NGR 21-002-096	2695
31	UNIV MARYLAND-COL PK	Neil, E A	GSFC	Thompson, O E	NSG 5209	2720
31	UNIV MARYLAND-COL PK	Wende, C	GSFC	Kundu, M R	NSG 5320	2723
31	UNIV MARYLAND-COL PK	Donley, J L	GSFC	Tidman, D A	NSG 5323	2724
31	UNIV MARYLAND-COL PK	Spencer, N W	GSFC	Lin, C S	NSG 5404	2727
31	UNIV MARYLAND-COL PK	Browell, E V	LARC	Wilkerson, T D	NCC 1-25	2688
31	UNIV MARYLAND-COL PK	Decher, R	MSFC	Alley, C O	NAS 8-33798	2683
31	UNIV MARYLAND-COL PK	Urban, E W	MSFC	Park, H J	NAS 8-33822	2684
31	UNIV MD-EASTRN SHORE	Trafford, G H	WFC	Chapin, E W	NAG 6-6	2742
31	UNIV MD-EASTRN SHORE	Torres, A L	WFC	Hung, Y W	NAG 6-16	2743
31	UNIV OF MIAMI	Alpert, J C	GSFC	Gidel, L T	NAG 5-166	2161
31	UNIV OF MIAMI	Oakes, A G	GSFC	Gordon, H R	NAS 5-22963	2164
31	UNIV OF MIAMI	Halem, M	GSFC	Estoque, M A	NSG 5342	2172
31	UNIV OF MIAMI	Fishman, J	LARC	Gidel, L T	NAG 1-207	2160
31	UNIV OF MIAMI	Fowles, W W	MSFC	Geisler, J E	NAS 8-33523	2166
31	UNIV MICH-ANN ARBOR	Spencer, N W	GSFC	Sharp, W E	NAG 5-140	2999
31	UNIV MICH-ANN ARBOR	Hedin, A E.	GSFC	Carignan, G R	NAS 5-11376	3018
31	UNIV MICH-ANN ARBOR	Spencer, N W	GSFC	Carignan, G R	NAS 5-11380	3019
31	UNIV MICH-ANN ARBOR	Bullock, G D	GSFC	Hays, P B	NAS 5-23006	3020
31	UNIV MICH-ANN ARBOR	Bullock, G D	GSFC	Walker, J C	NAS 5-24331	3023
31	UNIV MICH-ANN ARBOR	Spencer, N W	GSFC	Carignan, G R	NAS 5-25002	3024
31	UNIV MICH-ANN ARBOR	Spencer, N W	GSFC	Carignan, G R	NAS 5-25031	3025
31	UNIV MICH-ANN ARBOR	Way, S	GSFC	Carignan, G R	NAS 5-25145	3027
31	UNIV MICH-ANN ARBOR	Niemann, H.	GSFC	Ponnaperuma, C	NAS 5-25153	3028
31	UNIV MICH-ANN ARBOR	Brown, W H	GSFC	Hays, P B	NAS 5-26169	3033
31	UNIV MICH-ANN ARBOR	Sing, M L	GSFC	Hayes, P B	NAS 5-26189	3034
31	UNIV MICH-ANN ARBOR	Brace, L H	GSFC	Nagy, A. F	NAS 5-26678	3035
31	UNIV MICH-ANN ARBOR	Reed, E I	GSFC	Stedman, D H	NSG 5189	3056
31	UNIV MICH-ANN ARBOR	Spencer, N W	GSFC	Fontheim, E G	NSG 5281	3057



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31	UNIV MICH-ANN ARBOR	Sullivan, E M	LARC	Drayson, S R	NAG 1-93	2993
31	UNIV MICH-ANN ARBOR	Russell, J M , III	LARC	Drayson, S R	NAS 1-14394	3011
31	UNIV MICH-ANN ARBOR	Pellett, G L	LARC	Dingle, A N	NSG 1243	3052
31	UNIV MICH-ANN ARBOR	Frostrom, R J , Jr	WFC	Horvath, J J	NAS 6-2794	3036
31	UNIV MICH-ANN ARBOR	Toth, R A	HQ-EB	Meriwether, J W	NAGW 32	3008
31	UNIV MICH-ANN ARBOR	Watson, R T	HQ-EB	Cochran, J L	NSG 7209	3058
31	UNIV MICH-ANN ARBOR	Devincenzi, D L	HQ-SB	Kuhn, W R	NSG 7308	3059
31	UNIV MICH-ANN ARBOR	Mayr, H G	HQ-SC	Nagy, A F	NGR 23-005-015	3046
31	UNIV MICH-ANN ARBOR	Schmerling, E R	HQ-SC	Hays, P B	NSG 7492	3062
31	UNIV MICH-ANN ARBOR	Murphy, R E	HQ-SL	Cravens, T E	NAGW 15	3006
31	UNIV MICH-ANN ARBOR	Murphy, R E	HQ-SL	Atreya, S K	NSG 7404	3060
31	U MINN-MNPLS-ST PAUL	Page, W A	ARC	Liu, B Y	NAG 2-31	3072
31	U MINN-MNPLS-ST PAUL	Rice, C	GSFC	Nier, A O	NAS 5-11438	3079
31	U MINN-MNPLS-ST PAUL	Beswick, A G	LARC	Mauersberger, K	NSG 1431	3089
31	U MINN-MNPLS-ST PAUL	Toth, R A	HQ-EB	Mauersberger, K	NSG 7221	3096
31	U MINN-MNPLS-ST PAUL	Murphy, R E	HQ-SL	Nier, A O	NGL 24-005-009	3085
31	UNIV MO-COLUMBIA	Smith, R E	MSFC	Tung, C	NAS 8-31150	3127
31	UNIV MO-COLUMBIA	Smith, R E	MSFC	Kassner, J L , Jr	NAS 8-31849	3128
31	UNIV MO-ROLLA	Smith, R E	MSFC	Hagen, D E	NAS 8-32976	3137
31	UNIV NEBRASKA-LINCLN	Murphy, R E	HQ-SL	Samson, J A	NGR 28-004-021	3174
31	UNIV NEVADA-DRI	Inn, E C	ARC	Rogers, C F	NAG 2-114	3178
31	UNIV NEVADA-DRI	Smith, R E	MSFC	Kocmond, W	NAS 8-32975	3179
31	UNIV NEVADA-DRI	Smith, R E	MSFC	Hallot, J	NAS 8-32977	3180
31	UNIV NEVADA-DRI	Fallon, R A	MSFC	Kocmond, W	NAS 8-33273	3181
31	UNIV NEVADA-DRI	Smith, R E	MSFC	Kocmond, W	NAS 8-33820	3182
31	UNIV NEW HAMP-DURHAM	Underwood, C	GSFC	Chupp, E L	NAS 5-23761	3197
31	UNIV NEW HAMP-DURHAM	Wende, C	GSFC	Fisk, L A	NSG 5316	3205
31	UNIV OF NEW MEXICO	Quaide, W L	HQ-SL	Keil, K	NSG 7579	3295
31	UNIV OREGON-EUGENE	Chan, K R	HQ-EB	Nolt, I G	NAGW 222	3803
31	UNIV OREGON-EUGENE	Kakar, R K	HQ-SC	Nolt, I G	NSG 7360	3806
31	UNIV OF PITTSBURGH	Murphy, R E	HQ-SL	Fite, W L	NGL 39-011-013	3933
31	UNIV OF PITTSBURGH	Murphy, R E	HQ-SL	Zipf, E C	NGL 39-011-030	3934
31	UNIV OF PITTSBURGH	Murphy, R E	HQ-SL	Biondi, M A	NGR 39-011-137	3936
31	UNIV OF SO FLORIDA	Hoell, J	LARC	Braman, R S	NAS 1-16844	2175
31	UNIV OF SOUTHERN CAL	Murphy, R E	HQ-SL	Kumar, S	NAGW 57	1851
31	UNIV OF SOUTHERN CAL	Murphy, R E	HQ-SL	Maxworthy, T	NAGW 146	1854
31	UNIV OF SOUTHERN CAL	Murphy, R E	HQ-SL	Maxworthy, T	NGR 05-018-178	1864
31	UNIV OF SOUTHERN CAL	Murphy, R E	HQ-SL	Judge, D L	NGR 05-018-180	1865
31	UNIV OF SOUTHERN CAL	Brinton, H C	HQ-SL	Shemansky, D E	NSG 7595	1877
31	UNIV OF SOUTHERN CAL	Murphy, R E	HQ-SL	Broadfoot, A L	NSG 7644	1878
31	UNIV TENNESSEE-KNOXV	Vaughan, O H	MSFC	Connett, J R	NAS 8-32031	4000
31	UNIV TENNESSEE-KNOXV	Camp, D W	MSFC	Kohl, R H	NAS 8-32635	4002
31	UNIV TENNESSEE-KNOXV	Camp, D W	MSFC	Frost, W	NAS 8-32692	4003
31	UNIV TENNESSEE-KNOXV	Fowles, W W	MSFC	Antar, B N	NAS 8-33386	4006
31	UNIV TENNESSEE-KNOXV	Schafer, C F	MSFC	Antar, B N	NAS 8-34268	4010
31	UNIV TENNESSEE-KNOXV	Murphy, R E	HQ-SL	Gailar, N M.	NGL 43-001-006	4014
31	UNIV TEXAS-DALLAS	Spencer, N W	GSFC	Heikkila, W J	NAG 5-138	4219
31	UNIV TEXAS-DALLAS	Bullock, G D	GSFC	Hoffman, J H	NAS 5-11406	4222
31	UNIV TEXAS-DALLAS	Bullock, G D	GSFC	Hanson, W B	NAS 5-11407	4223
31	UNIV TEXAS-DALLAS	Piterski, N	GSFC	Heelis, R A	NAS 5-26174	4231
31	UNIV TEXAS-DALLAS	Brace, L H	GSFC	Heikkila, W J	NSG 5085	4242
31	UNIV TEXAS-DALLAS	Brace, L H	GSFC	Hoffman, J H	NSG 5087	4243
31	UNIV TEXAS-DALLAS	Spencer, N W	GSFC	Klumpar, D M	NSG 5280	4244
31	UNIV TEXAS-DALLAS	Moore, W W	MSFC	Hoffman, J H	NAS 8-32689	4234
31	UNIV TEXAS-DALLAS	Jones, C T	MSFC	Tinsley, B A	NAS 8-33827	4236
31	UNIV TEXAS-DALLAS	Mayr, H G	HQ-SC	Hanson, W B	NGR 44-004-120	4240
31	UNIV TEXAS-DALLAS	Murphy, R E	HQ-SL	Hoffman, J H	NAGW 64	4221
31	UNIV TEXAS-DALLAS	Murphy, R E	HQ-SL	Hanson, W B	NGL 44-004-026	4238

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31	UNIV TEXAS-DALLAS	Quaide, W L	HQ-SL	Hodges, R R , Jr	NSG 7034	4245
31	UNIV TEXAS-DALLAS	Murphy, R E	HQ-SL	Hanson, W B	NSG 7599	4246
31	UNIV TEXAS-S ANTONIO	Spencer, N W	GSFC	Burch, J L	NSG 5418	4265
31	UNIV TEXAS-S ANTONIO	Chappell, C	MSFC	Burch, J L	NAS 8-32584	4264
31	UNIV OF UTAH	Pollack, J B	ARC	Liou, K	NCA 2-821001	4279
31	UNIV OF UTAH	Rivas, E	GSFC	Paegle, J	NAG 5-127	4271
31	UNIV OF UTAH	Greaves, J R	GSFC	Kao, S K	NAS 5-25373	4277
31	UNIV OF UTAH	Jones, C T	MSFC	Torr, M R	NAS 8-33992	4278
31	UNIV OF UTAH	Murphy, R E	HQ-SL	Sassen, K	NAGW 82	4275
31	UNIV OF VIRGINIA	Rodgers, E B	GSFC	Frank, W M	NAG 5-102	4402
31	UNIV OF VIRGINIA	Jones, J L	LARC	Singer, S F	NAS 1-16550	4408
31	UNIV OF WASHINGTON	Summers, A L	ARC	Holton, J R	NAG 2-66	4514
31	UNIV OF WASHINGTON	Page, W A	ARC	Charlson, R J	NSG 2362	4552
31	UNIV OF WASHINGTON	Nelson, D	GSFC	Katsaros, K B	NAS 5-26262	4538
31	UNIV OF WASHINGTON	Reber, C A	GSFC	Holton, J R	NAS 5-26301	4539
31	UNIV OF WASHINGTON	Warner, J L	JSC	Brownlee, D E	NSG 9052	4565
31	UNIV OF WASHINGTON	Hinton, D E	LARC	Leovy, C	NAS 1-14341	4536
31	UNIV OF WASHINGTON	Hall, J B	LARC	Hartman, D L	NAS 1-16462	4537
31	UNIV OF WASHINGTON	Smith, R E	MSFC	Hobbs, P V	NAS 8-33148	4541
31	UNIV OF WASHINGTON	Smith, R E	MSFC	Ely, J T	NAS 8-33884	4543
31	UNIV OF WASHINGTON	Brinton, H C	HQ-SL	Tillman, J E	NAGW 36	4532
31	UNIV OF WASHINGTON	Murphy, R E	HQ-SL	Leovy, C	NAGW 228	4535
31	UNIV OF WASHINGTON	Murphy, R E	HQ-SL	Leovy, C	NSG 7085	4559
31	UNIV OF WASHINGTON	Murphy, R E	HQ-SL	Leovy, C	NSG 7611	4563
31	UNIV WISC-MADISON	Adler, R F	GSFC	Schlesinger, R E	NAG 5-23	4587
31	UNIV WISC-MADISON	Atlas, R M	GSFC	Johnson, D R.	NAG 5-81	4588
31	UNIV WISC-MADISON	Rivas, E	GSFC	Wahba, G	NAG 5-128	4589
31	UNIV WISC-MADISON	Montgomery, H E	GSFC	Suomi, V E	NAS 5-21965	4598
31	UNIV WISC-MADISON	Gemmell, J	GSFC	Kraushaar, W L	NAS 5-22410	4600
31	UNIV WISC-MADISON	Greaves, J R	GSFC	Suomi, V E	NAS 5-23462	4601
31	UNIV WISC-MADISON	Greaves, J R	GSFC	Suomi, V E	NAS 5-25148	4603
31	UNIV WISC-MADISON	Greaves, J R	GSFC	Suomi, V E	NAS 5-25377	4604
31	UNIV WISC-MADISON	Greaves, J R	GSFC	Suomi, V E	NAS 5-26540	4613
31	UNIV WISC-MADISON	Halem, M	GSFC	Kutzbach, J E	NSG 5152	4629
31	UNIV WISC-MADISON	Halem, M	GSFC	Herman, G F	NSG 5223	4630
31	UNIV WISC-MADISON	Minzner, R A.	GSFC	Suomi, V E	NSG 5251	4631
31	UNIV WISC-MADISON	Halem, M	GSFC	Horn, L H	NSG 5252	4632
31	UNIV WISC-MADISON	Browell, E V	LARC	Eloranta, E	NAG 1-212	4583
31	UNIV WISC-MADISON	Browell, E V	LARC	Eloranta, E	NAS 1-14136	4596
31	UNIV WISC-MADISON	Hall, J B , Jr	LARC	Smith, W L	NAS 1-16507	4597
31	UNIV WISC-MADISON	Shook, D F	LERC	Scarpace, F L.	NAG 3-174	4586
31	UNIV WISC-MADISON	Turner, R E	MSFC	Johnson, D R	NAS 8-33222	4615
31	UNIV WISC-MADISON	Turner, R E	MSFC	Suchman, D	NAS 8-33799	4616
31	UNIV WISC-MADISON	Turner, R E	MSFC	Fox, R	NAS 8-33954	4617
31	UNIV WISC-MADISON	Turner, R E	MSFC	Fox, R	NAS 8-34557	4618
31	UNIV WISC-MADISON	Dodge, J C	HQ-EB	Suomi, V E	NASW 3476	4620
31	UNIV WISC-MADISON	Brinton, H	HQ-SL	Suomi, V E	NAGW 47	4595
31	UNIV WISC-MADISON	Brinton, H C	HQ-SL	Suomi, V E	NGR 50-002-189	4627
31	UNIV OF WYOMING	Toon, O. B	ARC	Rosen, J M	NAG 2-65	4638
31	UNIV OF WYOMING	McCormick, M P	LARC	Pepin, T J	NAS 1-14373	4640
31	UNIV OF WYOMING	McMaster, L R	LARC	Pepin, T J	NAS 1-14931	4641
31	UNIV OF WYOMING	McMaster, L R	LARC	Hofmann, D J	NAS 1-15377	4642
31	UNIV OF WYOMING	McMaster, L R	LARC	Pepin, T J	NAS 1-16305	4643
31	UNIV OF WYOMING	McMaster, L R	LARC	Pepin, T J	NSG 1518	4646
31	UNIV OF WYOMING	Smith, R E	MSFC	Vah, G	NAS 8-33150	4645
31	UTAH STATE UNIV	Browne, W H , Jr	GSFC	Torr, D G	NAS 5-26171	4289
31	UTAH STATE UNIV	Chappell, C R	MSFC	Raitt, W J	NAS 8-32636	4290
31	UTAH STATE UNIV	Johnson, W G	MSFC	Williamson, P R	NAS 8-33381	4291

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31	UTAH STATE UNIV	Johnson, W G	MSFC	Banks, P M	NAS 8-33383	4292
31	UTAH STATE UNIV	Mayr, H G	HQ-SC	Banks, P M	NSG 7289	4300
31	VIRGINIA POLY INST	Meehan, K T	GSFC	Havalick, R M	NAS 5-25839	4472
31	VIRGINIA POLY INST	Hinton, D E	LARC	Mahan, J R	NAS 1-16508	4470
31	VIRGINIA POLY INST	Schmidlin, F J	WFC	Tieleman, H W	NGL 47-004-067	4482
31	VIRGINIA POLY INST	Freibaum, J	HQ-SC	Krebs, A H	NASW 3357	4477
31	WASHINGTON ST UNIV	Page, W A	ARC	Sheppard, J C	NAG 2-97	4566
31	WASHINGTON ST UNIV	Watson, R T	HQ-EB	Cronn, D	NSG 7214	4574
31	WASHINGTON UNIVERSTY	Cuzzi, J N	ARC	Smith, W H	NCA 2-841001	3155
31	WASHINGTON UNIVERSTY	Warner, J L	JSC	Hohenberg, C M	NAG 9-7	3147
31	WASHINGTON UNIVERSTY	Boughner, R E	LARC	Smith, W H	NAG 1-38	3145
31	WAYNE STATE UNIV	Munoz, R M	ARC	Wang, C C	NAG 2-39	3065
31	WESTRN KENTUCKY UNIV	Stonemetz, R E	MSFC	Healy, H	NAS 8-33387	2562
31	WESTRN KENTUCKY UNIV	Green, J L	MSFC	Six, N F	NAS 8-34424	2563
31	YALE UNIVERSITY	Toon, O B	ARC	Wegner, P P	NAG 2-15	2006
32	ARIZONA STATE UNIV	Pollack, J B	ARC	Krinsley, D	NCA 2-35001	1110
32	ARIZONA STATE UNIV	Warner, J L	JSC	Buseck, P R	NAG 9-4	1099
32	ARIZONA STATE UNIV	Devincenzi, D L	HQ-SB	Cronin, J R	NSG 7255	1116
32	ARIZONA STATE UNIV	Boyce, J M	HQ-SL	Malin, M C	NAGW 1	1100
32	ARIZONA STATE UNIV	Boyce, J M	HQ-SL	Schubert, G	NAGW 24	1101
32	ARIZONA STATE UNIV	Quaide, W L	HQ-SL	Greeley, R	NAGW 56	1102
32	ARIZONA STATE UNIV	Boyce, J M	HQ-SL	Greeley, R	NAGW 132	1103
32	ARIZONA STATE UNIV	Boyce, J M	HQ-SL	Malin, M	NAGW 139	1104
32	ARIZONA STATE UNIV	French, B M	HQ-SL	Buseck, P R	NAGW 143	1105
32	ARIZONA STATE UNIV	Quaide, W L	HQ-SL	Holloway, J R	NAGW 182	1106
32	ARIZONA STATE UNIV	French, B M	HQ-SL	Moore, C B	NGL 03-001-001	1111
32	ARIZONA STATE UNIV	French, B M	HQ-SL	Larimer, J W	NSG 7040	1115
32	ARIZONA STATE UNIV	Boyce, J M	HQ-SL	Greeley, R	NSG 7415	1117
32	ARIZONA STATE UNIV	Dwornik, S E	HQ-SL	Greeley, R	NSG 7429	1118
32	ARIZONA STATE UNIV	Boyce, J M	HQ-SL	Rankin, R L	NSG 7630	1120
32	ARIZONA STATE UNIV	Dwornik, S E	HQ-SL	Sheridan, M	NSG 7642	1121
32	AUBURN UNIV-AUBURN	Slaby, J A	MSFC	Moore, R K	NAS 8-34130	1015
32	BOSTON UNIVERSITY	Devincenzi, D L	HQ-SB	Margulis, L	NGR 22-004-025	2755
32	BROWN UNIVERSITY	Holweck, E C	GSFC	Parmentier, E M	NAG 5-50	3948
32	BROWN UNIVERSITY	Broderick, J C	GSFC	Head, J W	NAS 5-26729	3952
32	BROWN UNIVERSITY	Quaide, W L	HQ-SL	Head, J W	NAGW 28	3949
32	BROWN UNIVERSITY	Dwornik, S E	HQ-SL	Head, J W	NASW 3285	3953
32	BROWN UNIVERSITY	Boyce, J M	HQ-SL	Head, J W	NASW 3508	3954
32	BROWN UNIVERSITY	Boyce, J M	HQ-SL	Head, J W	NGR 40-002-088	3955
32	BROWN UNIVERSITY	Boyce, J M	HQ-SL	Head, J W	NGR 40-002-116	3956
32	BROWN UNIVERSITY	Boyce, J M	HQ-SL	Head, J W	NSG 7569	3959
32	BROWN UNIVERSITY	Boyce, J M	HQ-SL	Head, J W	NSG 7570	3960
32	BROWN UNIVERSITY	Quaide, W L	HQ-SL	Rutherford, M J	NSG 7589	3961
32	BROWN UNIVERSITY	Quaide, W L	HQ-SL	Parmentier, E M	NSG 7605	3962
32	CALIF INST OF TECH	Vitale, J A	HQ-ET	Anderson, D L	NSG 7610	1304
32	CALIF INST OF TECH	Boyce, J M	HQ-SL	Shoemaker, E M	NAGW 138	1249
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Tombrello, T A	NAGW 148	1250
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Stevenson, D J	NAGW 185	1252
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Stone, E C	NAGW 200	1253
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Haff, P K	NAGW 202	1254
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Ahrens, T J	NAGW 205	1255
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Ahrens, T J	NGL 05-002-105	1274
32	CALIF INST OF TECH	Boyce, J M	HQ-SL	Shoemaker, E M	NGR 05-002-303	1285
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Ahrens, T J	NSG 7129	1298
32	CALIF INST OF TECH	Quaide, W L	HQ-SL	Burnett, D S	NSG 7202	1299
32	CAL STATE U-FULLERTN	French, B M	HQ-SL	Woolum, D S	NSG 7314	1319
32	CARNEGIE-MELLON UNIV	French, B M	HQ-SL	Kohman, T P	NSG 7585	3816
32	CITY COLLEGE OF N Y	Boyce, J M	HQ-SL	Weiss, D	NAGW 22	3301

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32	CITY COLLEGE OF N Y	Quaide, W L	HQ-SL	Saxena, S K	NAGW 59	3302
32	COLUMBIA UNIVERSITY	Holweck, E C	GSFC	Haxby, W F	NAG 5-33	3315
32	COLUMBIA UNIVERSITY	Welker, J	GSFC	Watts, T S	NAG 5-98	3316
32	COLUMBIA UNIVERSITY	Smith, D E	GSFC	Watts, A B	NCC 5-3	3331
32	COLUMBIA UNIVERSITY	Ungar, S G	GSFC	Lewis, R A	NCC 5-20	3333
32	COLUMBIA UNIVERSITY	French, B M	HQ-SL	Zindler, A	NSG 7466	3339
32	CORNELL UNIVERSITY	Welker, J	GSFC	Turcotte, D L	NAG 5-39	3348
32	CORNELL UNIVERSITY	Harper, E L	GSFC	Oliver, J E	NAG 5-40	3349
32	CORNELL UNIVERSITY	Allenby, R J	GSFC	Oliver, J	NCC 5-4	3360
32	CORNELL UNIVERSITY	Cohen, S C	GSFC	Turcotte, D L	NSG 5060	3378
32	CORNELL UNIVERSITY	Boyce, J M	HQ-SL	Thomas, P	NAGW 111	3352
32	CORNELL UNIVERSITY	Quaide, W L	HQ-SL	Veverka, J	NAGW 193	3354
32	CORNELL UNIVERSITY	Boyce, J M	HQ-SL	Veverka, J	NASW 3342	3357
32	CORNELL UNIVERSITY	Quaide, W L	HQ-SL	Turcotte, D L	NGR 33-010-108	3366
32	CORNELL UNIVERSITY	Boyce, J M	HQ-SL	Sagan, C E	NGR 33-010-220	3370
32	CORNELL UNIVERSITY	Boyce, J M	HQ-SL	Veverka, J	NSG 7156	3380
32	CORNELL UNIVERSITY	Boyce, J M	HQ-SL	Veverka, J	NSG 7498	3386
32	CORNELL UNIVERSITY	Boyce, J M	HQ-SL	Veverka, J	NSG 7546	3388
32	CORNELL UNIVERSITY	Boyce, J M	HQ-SL	Veverka, J	NSG 7547	3389
32	CORNELL UNIVERSITY	Quaide, W L	HQ-SL	Burns, J A	NSG 7593	3390
32	CORNELL UNIVERSITY	Quaide, W L	HQ-SL	Veverka, J	NSG 7606	3391
32	DARTMOUTH COLLEGE	Kouns, C W	GSFC	Birnie, R W	NAG 5-159	3187
32	DARTMOUTH COLLEGE	Ungar, S G	GSFC	Stoiber, R E	NCC 5-22	3189
32	DARTMOUTH COLLEGE	Wende, C	GSFC	Sonnerup, B U	NSG 5348	3192
32	GEORGIA INST OF TECH	Kassak, J E	KSC	Steinway, W J	NAS10-9757	2213
32	HARVARD UNIVERSITY	Devincenzi, D L	HQ-SB	Barghoorn, E S	NGL 22-007-069	2793
32	HARVARD UNIVERSITY	Quaide, W L	HQ-SL	Cameron, A G	NGR 22-007-269	2796
32	HARVARD UNIVERSITY	Quaide, W L	HQ-SL	O'connell, R J	NSG 7513	2808
32	HUNTER COLLEGE	Ungar, S G	GSFC	Robinson, V B	NSG 5325	3395
32	INDIANA U-BLOOMINGTN	McKay, D S	JSC	Basu, A	NSG 9072	2392
32	INDIANA U-BLOOMINGTN	Warner, J L	JSC	Basu, A	NSG 9077	2393
32	INDIANA U-BLOOMINGTN	Devincenzi, D L	HQ-SB	Hayes, J M	NGR 15-003-118	2390
32	INDIANA U-BLOOMINGTN	Devincenzi, D L	HQ-SB	Ripley, E M	NSG 7520	2391
32	JACKSON STATE UNIV	Atwell, B H	NSTL	Lang, M	NSG 736	3102
32	JOHNS HOPKINS UNIV	Welker, J	GSFC	Marsh, B D	NAG 5-32	2594
32	JOHNS HOPKINS UNIV	Kouns, C W	GSFC	Marsh, B D	NAG 5-35	2595
32	JOHNS HOPKINS UNIV	Langel, R A	GSFC	Marsh, B D	NCC 5-18	2611
32	KANSAS STATE UNIV	Quaide, W L	HQ-SL	Underwood, J R , Jr	NSG 7580	2491
32	KANSAS STATE UNIV	Boyce, J M	HQ-SL	Underwood, J R , Jr	NSG 7613	2492
32	KENT STATE UNIV-KENT	Labovitz, M L	GSFC	Craig, R G	NAG 5-165	3646
32	KENT STATE UNIV-KENT	Toll, D	GSFC	Craig, R	NAS 5-26111	3648
32	LEHIGH UNIVERSITY	French, B M	HQ-SL	Goldstein, J I	NGR 39-007-043	3846
32	LA ST U&A&M COL-BRGE	Atwell, B H	NSTL	Whitehurst, C A	NAS13-142	2570
32	LA ST U&A&M COL-BRGE	Ivey, J H	NSTL	Whitehurst, C A	NAS13-148	2571
32	LA STATE U-SHREVEPT	Boyce, J M	HQ-SL	Nummedal, D	NSG 7542	2573
32	MASS INST OF TECH	Chang, A T	GSFC	Kong, J A	NAG 5-16	2842
32	MASS INST OF TECH	Kouns, C W	GSFC	Molnar, P	NAG 5-19	2843
32	MASS INST OF TECH	Kouns, C W	GSFC	Calvert, W	NAG 5-41	2844
32	MASS INST OF TECH	Kouns, C W	GSFC	Solomon, S C	NAG 5-44	2846
32	MASS INST OF TECH	Halem, M	GSFC	Eagleson, P S	NAG 5-89	2847
32	MASS INST OF TECH	Kouns, C W	GSFC	Spear, F S	NAG 5-147	2851
32	MASS INST OF TECH	Mead, G. D	GSFC	Molnar, P	NCC 5-8	2895
32	MASS INST OF TECH	Clark, T A	GSFC	Shapiro, I I	NGR 22-009-839	2910
32	MASS INST OF TECH	Halem, M	GSFC	Eagleson, P S	NSG 5306	2936
32	MASS INST OF TECH	Quaide, W L	HQ-SL	Uhlmann, D R	NAGW 49	2859
32	MASS INST OF TECH	Quaide, W L	HQ-SL	Solomon, S	NAGW 191	2863
32	MASS INST OF TECH	Quaide, W L	HQ-SL	Shapiro, I I	NAGW 215	2865
32	MASS INST OF TECH	Quaide, W L	HQ-SL	Counselman, H C C , III	NSG 7010	2937

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32	MASS INST OF TECH	Quaide, W L	HQ-SL	Toksoz, M N	NSG 7081	2938
32	MASS INST OF TECH	Boyce, J M	HQ-SL	Solomon, S C	NSG 7297	2940
32	MASS INST OF TECH	Quaide, W L	HQ-SL	Burns, R G	NSG 7604	2946
32	MIDDLE TENN ST UNIV	Atwell, B H	NSTL	Fullerton, R O	NAS13-171	3988
32	MISSISSIPPI STATE U	Atwell, B H	NSTL	Miller, W F	NAS13-158	3112
32	MURRAY STATE U-KY	Patterson, F A	NSTL	Weber, N N	NAS13-177	2545
32	NO CAROLINA STATE U	Oseroff, H	GSFC	Won, I J	NAS 5-26157	3543
32	NE LOUISIANA UNIV	Boyce, J M	HQ-SL	Dehon, R	NSG 7534	2575
32	NE LOUISIANA UNIV	Boyce, J M	HQ-SL	Dehon, R	NSG 7628	2576
32	OHIO STATE UNIV	Stephanides, C C	GSFC	Mueller, I I	NAS 5-25888	3670
32	OHIO STATE UNIV	Welker, J	GSFC	Rapp, R H	NGR 36-008-161	3677
32	OHIO STATE UNIV	Welker, J	GSFC	Mueller, I I	NSG 5265	3691
32	OKLAHOMA STATE UNIV	Barlow, R M	NSTL	Walsh, S J	NAS13-184	3769
32	OREGON STATE UNIV	Phinney, W C	JSC	Lawrence, R D	NAG 9-2	3791
32	OREGON STATE UNIV	Boyce, J M	HQ-SL	Komar, P D	NSG 7178	3799
32	PENN STATE U-UNIV PK	Toon, O B	ARC	Anthes, R A	NCA 2-589001	3886
32	PENN STATE U-UNIV PK	Kouns, C W	GSFC	Alexander, S S	NAG 5-49	3863
32	PENN STATE U-UNIV PK	Kouns, C W	GSFC	Alexander, S S	NAG 5-77	3865
32	PENN STATE U-UNIV PK	Labovitz, M L	GSFC	Smith, C B	NAS 5-26215	3873
32	PENN STATE U-UNIV PK	Oserof, H	GSFC	Petersen, G W	NAS 5-26612	3878
32	PENN STATE U-UNIV PK	Allenby, R J	GSFC	Alexander, S S	NCC 5-12	3889
32	PENN STATE U-UNIV PK	Allenby, R J	GSFC	Alexander, S S	NCC 5-19	3890
32	PENN STATE U-UNIV PK	Allenby, R J	GSFC	Alexander, S S	NSG 5185	3910
32	PENN STATE U-UNIV PK	Carter, C H	HQ-LC	Gold, D P	NGT 39-009-803	3896
32	PENN STATE U-UNIV PK	Quaide, W L	HQ-SL	Gold, D P	NGL 39-009-010	3892
32	POMONA COLLEGE	Quaide, W L	HQ-SL	Baird, A K	NSG 7566	1334
32	PRINCETON UNIVERSITY	Stephanides, C C	GSFC	Morgan, W J	NAS 5-25896	3230
32	PRINCETON UNIVERSITY	Boyce, J M	HQ-SL	Judson, S	NSG 7568	3252
32	PRINCETON UNIVERSITY	Quaide, W L	HQ-SL	Judson, S	NSG 7602	3253
32	PURDUE UNIVERSITY	Oseroff, H	GSFC	Hinze, W J	NAS 5-26287	2410
32	PURDUE UNIVERSITY	Allenby, R J	GSFC	Braile, L W	NCC 5-21	2419
32	PURDUE UNIVERSITY	Hatcher, N M	JSC	Hoffer, R M	NAS 9-15889	2415
32	PURDUE UNIVERSITY	French, B M	HQ-SL	Lipschutz, M E	NGL 15-005-140	2420
32	RICE UNIVERSITY	Warner, J L	JSC	Ling, A C	NGL 44-006-127	4068
32	RICE UNIVERSITY	Quaide, W L	HQ-SC	Freeman, J W, Jr	NSG 7157	4075
32	RICE UNIVERSITY	Quaide, W L	HQ-SL	Clayton, D D	NSG 7361	4076
32	RUTGERS U-N BRUNSWK	Warner, J L	JSC	Klein, L C	NSG 9065	3263
32	RUTGERS U-N BRUNSWK	French, B M	HQ-SL	Herzog, G F	NAGW 142	3258
32	RUTGERS U-N BRUNSWK	Quaide, W L	HQ-SL	Herzberg, C T	NAGW 177	3259
32	RUTGERS U-N BRUNSWK	French, B M	HQ-SL	Hewins, R H	NSG 7327	3261
32	RUTGERS U-N BRUNSWK	Boyce, J M	HQ-SL	Zebib, A	NSG 7601	3262
32	SOUTHERN METHODIST U	Blanchard, D P	JSC	Dungan, M A	NAS 9-16140	4079
32	SOUTHERN METHODIST U	Carter, C H	HQ-LC	Dungan, M A	NGT 44-007-800	4081
32	STANFORD UNIVERSITY	Welker, J	GSFC	Nur, A M	NAG 5-178	1404
32	STANFORD UNIVERSITY	Boyce, J M	HQ-SL	Liebes, S	NAGW 128	1410
32	STANFORD UNIVERSITY	Boyce, J M	HQ-SL	Howard, H T	NGR 05-020-649	1486
32	STANFORD UNIVERSITY	Boyce, J M	HQ-SL	Levinthal, E	NSG 7538	1505
32	STATE UNIV NY-ALBANY	Kouns, C W	GSFC	Dewey, J F	NAG 5-24	3450
32	STATE UNIV NY-ALBANY	Kouns, C W	GSFC	Burke, K	NAG 5-155	3451
32	STATE UNIV NY-ALBANY	Boyce, J M	HQ-SL	Anderson, D M	NASW 3333	3459
32	STATE U NY-BINGHAMTN	Welker, J	GSFC	Dickman, S R	NAG 5-145	3466
32	STATE UNIV NY-BUFFAL	Boyce, J M	HQ-SL	Shapiro, I I	NGR 33-015-108	3470
32	STATE U NY-STONY BRK	Cohen, S C	GSFC	Melosh, H J	NAG 5-7	3473
32	STATE U NY-STONY BRK	Welker, J	GSFC	Melosh, H J	NAG 5-151	3474
32	STATE U NY-STONY BRK	Carter, C H	HQ-LC	Papike, J J	NGT 33-015-800	3495
32	STATE U NY-STONY BRK	French, B M	HQ-SL	Schaeffer, O A	NAGW 25	3477
32	STATE U NY-STONY BRK	Quaide, W L	HQ-SL	Melosh, H J	NAGW 50	3478
32	STATE U NY-STONY BRK	Boyce, J M	HQ-SL	Owen, T	NSG 7553	3502

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32	TEXAS A&M UNIVERSITY	Schmugge, T J	GSFC	Newton, R W	NAG 5-31	4092
32	TEXAS A&M UNIVERSITY	Kouns, C W	GSFC	Jones, G M	NAG 5-94	4093
32	TEXAS A&M UNIVERSITY	Taylor, P T	GSFC	Jones, G M	NCC 5-11	4121
32	TEXAS A&M UNIVERSITY	Chang, A. T	GSFC	McFarland, J	NSG 5134	4130
32	TEXAS A&M UNIVERSITY	Carter, C H	HQ-LC	McGrail, D W	NGT 44-001-801	4126
32	TEXAS TECH UNIV	Halstead, T W	HQ-SB	Hartman, H B	NSG 7435	4139
32	UNIV ALA-HUNTSVILLE	West, G W	MSFC	Hung, R J	NAS 8-33726	1051
32	UNIV ALASKA-FAIRBNKS	Duke, M B	JSC	Forbes, R B	NAG 9-8	1083
32	UNIV ALASKA-FAIRBNKS	Duke, M B	JSC	Benson, C S	NAG 9-9	1084
32	UNIV OF ARIZONA	Devincenzi, D L	HQ-SB	Nagy, B	NGR 03-002-171	1189
32	UNIV OF ARIZONA	Boyce, J M	HQ-SL	Woronow, A	NAGW 134	1150
32	UNIV OF ARIZONA	Boyce, J M	HQ-SL	Strom, R	NAGW 135	1151
32	UNIV OF ARIZONA	Quaide, W L	HQ-SL	Hubbard, W B	NAGW 192	1154
32	UNIV OF ARIZONA	French, B M	HQ-SL	Drake, M J	NAGW 220	1155
32	UNIV OF ARIZONA	Quaide, W L	HQ-SL	Sonett, C P	NGR 03-002-370	1193
32	UNIV OF ARIZONA	French, B M	HQ-SL	Wilkening, L L	NSG 7011	1200
32	UNIV OF ARIZONA	Quaide, W L	HQ-SL	Sonett, C P	NSG 7020	1201
32	UNIV OF ARIZONA	Boyce, J M	HQ-SL	Strom, R G	NSG 7146	1207
32	UNIV OF ARIZONA	French, B M	HQ-SL	Zellner, B H	NSG 7249	1208
32	UNIV OF ARIZONA	Quaide, W L	HQ-SL	Levy, E H	NSG 7419	1212
32	UNIV OF ARIZONA	French, B M	HQ-SL	Boynton, W V	NSG 7436	1213
32	UNIV OF ARIZONA	Boyce, J M	HQ-SL	Woronow, A	NSG 7544	1216
32	UNIV OF ARIZONA	Quaide, W L	HQ-SL	Drake, M J	NSG 7576	1220
32	UNIV OF ARIZONA	Quaide, W L	HQ-SL	Drake, M J	NSG 7577	1221
32	UNIV OF ARIZONA	Quaide, W L	HQ-SL	Lebofsky, L	NSG 7607	1222
32	UNIV ARKANSAS-FAYETV	Duke, M B	JSC	MacDonald, H C	NAG 9-3	1226
32	UNIV CALIF-BERKELEY	Wales, R O	GSFC	Anderson, K A	NAS 5-22307	1548
32	UNIV CALIF-BERKELEY	Devincenzi, D L	HQ-SB	Calvin, M	NGL 05-003-003	1574
32	UNIV CALIF-DAVIS	Pollack, J B	ARC	White, B R	NCA 2-180101	1606
32	UNIV CALIF-L ANGELES	Welker, J.	GSFC	Schubert, G	NAG 5-152	1632
32	UNIV CALIF-L ANGELES	Welker, J.	GSFC	Kaula, W M	NSG 5263	1678
32	UNIV CALIF-L ANGELES	Wende, C	GSFC	Siscoe, G L	NSG 5351	1680
32	UNIV CALIF-L ANGELES	Murphy, J P	HQ-ER	Knopoff, L	NASW 3416	1651
32	UNIV CALIF-L ANGELES	Devincenzi, D L	HQ-SB	Kaplan, I R	NGR 05-007-221	1661
32	UNIV CALIF-L ANGELES	Devincenzi, D L	HQ-SB	Schopf, J W	NGR 05-007-407	1667
32	UNIV CALIF-L ANGELES	Schmerling, E R	HQ-SC	Schopf, J W	NSG 7489	1691
32	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Stevenson, D J	NAGW 41	1634
32	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Kaula, W M	NGL 05-007-002	1657
32	UNIV CALIF-L ANGELES	Boyce, J M	HQ-SL	Schubert, G	NGR 05-007-317	1663
32	UNIV CALIF-L ANGELES	French, B M	HQ-SL	Wasson, J T	NGR 05-007-329	1665
32	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Coleman, P J, Jr	NGR 05-007-351	1666
32	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Christie, J M	NSG 7052	1683
32	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Schubert, G	NSG 7315	1687
32	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Busse, F W	NSG 7484	1690
32	UNIV CALIF-L ANGELES	Quaide, W L	HQ-SL	Shubert, G	NSG 7583	1692
32	UNIV CALIF-SAN DIEGO	Welker, J	GSFC	Berger, J	NAG 5-11	1699
32	UNIV CALIF-SAN DIEGO	Devincenzi, D L	HQ-SB	Miller, S L	NAGW 20	1709
32	UNIV CALIF-SAN DIEGO	Quaide, W L	HQ-SL	Suess, H	NAGW 103	1713
32	UNIV CALIF-SAN DIEGO	Quaide, W L	HQ-SL	Arnold, J R	NAGW 210	1715
32	UNIV CALIF-SAN DIEGO	Quaide, W L	HQ-SL	Arrhenius, G	NGL 05-009-002	1734
32	UNIV CALIF-SAN DIEGO	Quaide, W L	HQ-SL	Arnold, J R	NGR 05-005-005	1738
32	UNIV CALIF-SAN DIEGO	Quaide, W L	HQ-SL	Arnold, J R	NSG 7027	1749
32	UNIV CALIF-SAN DIEGO	Quaide, W L	HQ-SL	Alfven, H	NSG 7102	1750
32	UNIV CALIF-SAN DIEGO	French, B M	HQ-SL	MacDougall, J D	NSG 7121	1751
32	UNIV CALIF-S BARBARA	Lowman, P D	GSFC	Estes, J E	NAG 5-177	1787
32	UNIV CALIF-S BARBARA	Chang, A	GSFC	Estes, J E	NCC 5-5	1796
32	UNIV CALIF-S BARBARA	Amsbury, D L	JSC	Strahler, A H	NAS 9-15509	1789
32	UNIV CALIF-S BARBARA	MacDonald, R B	JSC	Estes, J E	NAS 9-16077	1790

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32	UNIV CALIF-S BARBARA	Quaide, W L	HQ-SL	Peale, S J	NGR 05-010-062	1797
32	UNIV CALIF-S BARBARA	Quaide, W L	HQ-SL	Fuller, M D	NSG 7586	1802
32	UNIV OF CHICAGO	French, B M	HQ-SL	Anders, E	NGL 14-001-010	2322
32	UNIV OF CHICAGO	French, B M	HQ-SL	Turkevich, A L	NGR 14-001-135	2328
32	UNIV OF CHICAGO	French, B M	HQ-SL	Grossman, L	NGR 14-001-249	2332
32	UNIV OF CHICAGO	Quaide, W L	HQ-SL	Schramm, D N	NSG 7212	2335
32	UNIV OF CHICAGO	French, B M	HQ-SL	Turkevich, A L	NSG 7532	2338
32	UNIV OF CHICAGO	French, B M	HQ-SL	Smith, J V	NSG 7550	2339
32	UNIV COLORADO-BOLDR	Kouns, C W	GSFC	Whitcomb, J H	NAG 5-21	1913
32	UNIV COLORADO-BOLDR	Kouns, C W	GSFC	Whitcomb, J H	NAG 5-22	1914
32	UNIV COLORADO-BOLDR	Stephanides, C C	GSFC	Smith, M L	NAS 5-25887	1940
32	UNIV COLORADO-BOLDR	Oseroff, H	GSFC	Benton, E R	NAS 5-25957	1941
32	UNIV COLORADO-BOLDR	Quaide, W L	HQ-SL	Spetzler, H A	NSG 7584	1971
32	UNIV OF DAYTON	Quaide, W L	HQ-SL	Piekutowski, A J	NSG 7444	3737
32	UNIV OF FLORIDA	Atwell, B H	NSTL	Hetrick, V	NAS13-167	2143
32	UNIV OF GEORGIA	Atwell, B H	NSTL	Welch, R	NAS13-123	2237
32	UNIV OF GEORGIA	Atwell, B H	NSTL	Welch, R	NAS13-157	2239
32	UNIV OF GEORGIA	Quaide, W L	HQ-SL	Wenner, D B	NSG 7433	2240
32	UNIV OF GEORGIA	Boyce, J M	HQ-SL	Brook, G	NSG 7539	2241
32	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	McCord, T B	NAGW 37	2245
32	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	Hawke, B R	NAGW 42	2246
32	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	Clark, R N	NAGW 115	2249
32	UNIV OF HAWAII-MANOA	Boyce, J M	HQ-SL	Fanele, F	NAGW 133	2250
32	UNIV OF HAWAII-MANOA	Boyce, J M	HQ-SL	Pilcher, C B	NAGW 136	2251
32	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	Fanale, F	NAGW 171	2253
32	UNIV OF HAWAII-MANOA	Boyce, J M	HQ-SL	Hawke, B R	NAGW 237	2254
32	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	McCord, T B	NSG 7312	2267
32	UNIV OF HAWAII-MANOA	Boyce, J M	HQ-SL	Pilcher, C B	NSG 7403	2269
32	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	Gaffey, M J	NSG 7462	2270
32	UNIV OF HAWAII-MANOA	Quaide, W L	HQ-SL	Gaffey, M J	NSG 7597	2273
32	UNIV HOUSTON-HOUSTON	Devincenzi, D L	HQ-SB	Oro, J	NGR 44-005-002	4150
32	UNIV HOUSTON-HOUSTON	Boyce, J M	HQ-SL	King, E A	NAGW 169	4143
32	UNIV HOUSTON-HOUSTON	Quaide, W L	HQ-SL	King, E A	NAGW 178	4144
32	UNIV HOUSTON-HOUSTON	Dwornik, S E	HQ-SL	Smith, R S	NSG 7410	4159
32	UNIV HOUSTON-HOUSTON	Boyce, J M	HQ-SL	Smith, R	NSG 7551	4161
32	UNIV HOUSTON-HOUSTON	French, B M	HQ-SL	King, E A	NSG 7617	4163
32	UNIV OF IOWA	Oseroff, H	GSFC	Carmichael, R S	NAS 5-26425	2479
32	UNIV OF KANSAS	Chang, A T	GSFC	Ulaby, F T	NAG 5-163	2506
32	UNIV OF KANSAS	Chang, A T	GSFC	Ulaby, F T	NSG 5335	2535
32	UNIV OF KANSAS	Paris, J F	JSC	Ulaby, F T	NAS 9-16419	2514
32	UNIV OF KANSAS	Atwell, B H	NSTL	Martino, E A	NAS13-131	2516
32	UNIV OF KANSAS	Atwell, B H	NSTL	Martino, E A	NAS13-166	2517
32	UNIV MARYLAND-COL PK	Masuoka, E J	GSFC	Siegrist, H G	NSG 5423	2729
32	UNIV MARYLAND-COL PK	Quaide, W L	HQ-SL	Roosen, J G	NSG 7046	2731
32	UNIV MARYLAND-COL PK	Quaide, W L	HQ-SL	Pai, S I	NSG 7365	2736
32	UNIV MARYLAND-COL PK	Quaide, W	HQ-SL	Tossell, J	NSG 7482	2738
32	UNIV OF MASS-AMHERST	Oserhoff, H	GSFC	Haggerty, S E	NAS 5-26414	2958
32	UNIV OF MASS-AMHERST	Warner, J L	JSC	Rhodes, J M	NSG 9069	2966
32	UNIV OF MASS-AMHERST	Quaide, W L	HQ-SL	Huguenin, R L	NAGW 40	2955
32	UNIV OF MASS-AMHERST	Boyce, J M	HQ-SL	McGill, G E	NGR 22-010-076	2961
32	UNIV OF MASS-AMHERST	Boyce, J M	HQ-SL	Huguenin, R L	NSG 7405	2963
32	UNIV OF MASS-AMHERST	French, B M	HQ-SL	Haggerty, S E	NSG 7549	2964
32	UNIV OF MASS-AMHERST	Dwornik, S E	HQ-SL	Wise, D	NSG 7571	2965
32	UNIV OF MIAMI	Oseroff, H	GSFC	Harrison, C G	NAS 5-26201	2165
32	UNIV MICH-ANN ARBOR	Jones, H W	ARC	Taketa, R	NCA 2-440101	3044
32	UNIV MICH-ANN ARBOR	Carter, C H	HQ-LC	Olson, C E	NGT 23-005-800	3051
32	U MINN-MNPLS-ST PAUL	Warner, J L	JSC	Weiblen, P W	NSG 9050	3098
32	UNIV MO-COLUMBIA	Joyce, A T	NSTL	Johannsen, C J	NAS13-140	3131

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32	UNIV MO-COLUMBIA	Joyce, A T	NSTL	Pirog, R	NAS13-174	3132
32	UNIV MO-COLUMBIA	Boyce, J M	HQ-SL	Stark, J W	NAGW 170	3126
32	UNIV MO-ROLLA	Atwell, B H	NSTL	Elifrits, C D	NAS13-150	3138
32	UNIV MO-ST LOUIS	Quaide, W L	HQ-SL	James, P B	NSG 7563	3144
32	UNIV NEB-OMAHA	Patterson, F A	NSTL	Rundguist, D C	NAS13-168	3177
32	UNIV NEW HAMP-DURHAM	Mayr, H G	HQ-SC	Moore, T E	NAGW 52	3195
32	UNIV OF NEW MEXICO	Dwornik, S E	HQ-SL	Elston, W E	NGL 32-004-011	3290
32	UNIV OF NEW MEXICO	French, B M	HQ-SL	Keil, K	NGL 32-004-064	3292
32	UNIV OF NEW MEXICO	Boyce, J M	HQ-SL	Elston, W E	NGR 32-004-062	3293
32	UNIV OF NORTH DAKOTA	Boyce, J L	HQ-SL	Karner, F R	NAGW 151	3563
32	UNIV OKLAHOMA-NORMAN	Atwell, B H	NSTL	Unavailable	NAS13-156	3782
32	UNIV OREGON-EUGENE	Quaide, W L	HQ-SL	Weill, D F	NGR 38-003-020	3805
32	UNIV OF PITTSBURGH	Kouns, C W	GSFC	Lidiak, E G	NSG 5270	3941
32	UNIV OF PITTSBURGH	Quaide, W L	HQ-SL	Cassidy, W A	NGL 39-011-085	3935
32	UNIV OF PITTSBURGH	Quaide, W L	HQ-SL	Hapke, B	NSG 7631	3944
32	UNIV OF RHODE ISLAND	Devincenzi, D L	HQ-SB	Abell, P I	NAGW 206	3964
32	UNIV OF RHODE ISLAND	Boyce, J M	HQ-SL	Boothroyd, J C	NSG 7414	3966
32	UNIV OF SANTA CLARA	Quaide, W L	HQ-SL	Aggarwal, H R	NSG 7330	1844
32	UNIV SO CAROLINA-COL	Dalton, J	GSFC	Cowen, D J	NAS13-144	3978
32	UNIV OF SOUTHERN CAL	Quaide, W L	HQ-SL	Sammis, C G	NAGW 43	1850
32	UNIV OF SOUTHERN CAL	French, B M	HQ-SL	Dabrowski, A J	NSG 7535	1876
32	UNIV TENNESSEE-KNOXV	Williams, R	JSC	Taylor, L A	NGT 43-001-800	4016
32	UNIV TENNESSEE-KNOXV	Carter, C H	HQ-LC	Taylor, L A	NGT 43-001-803	4019
32	UNIV TENNESSEE-KNOXV	French, B M	HQ-SL	McSween, H Y	NSG 7413	4022
32	UNIV TEXAS-AUSTIN	Stephanides, C C	GSFC	Shelus, P J	NAS 5-25898	4180
32	UNIV TEXAS-AUSTIN	Blanchard, D P	JSC	Muehlberger, W R	NAG 9-11	4177
32	UNIV TEXAS-AUSTIN	Harris, J W	JSC	Gose, W A	NSG 9021	4217
32	UNIV TEXAS-AUSTIN	Dwornik, S E	HQ-SL	Muehlberger, W R	NSG 7363	4210
32	UNIV TEXAS-AUSTIN	Quaide, W L	HQ-SL	Smoluchowski, R	NSG 7505	4215
32	UNIV TEXAS-AUSTIN	Boyce, J M	HQ-SL	Baker, V	NSG 7557	4216
32	UNIV TEXAS-DALLAS	Oseroff, H	GSFC	Klumpar, D M	NAS 5-26309	4232
32	UNIV TEXAS-EL PASO	Oseroff, H	GSFC	Keller, E R	NAS 5-26326	4248
32	U TEX MED BRANCH-GAL	Stephanides, C C	GSFC	Dorman, H J	NAS 5-25897	4254
32	U TEX MED BRANCH-GAL	Quaide, W L	HQ-SL	Makamura, Y	NSG 7418	4257
32	UNIV OF UTAH	Lowman, P D	GSFC	Smith, R B	NAG 5-164	4272
32	U VERMONT & ST AGR C	Vitale, J A	HQ-ET	Whitmore, R A	NSG 7453	4306
32	UNIV OF VIRGINIA	Quaide, W L	HQ-SL	Johnson, R E	NAGW 186	4405
32	UNIV OF VIRGINIA	Boyce, J M	HQ-SL	Howard, A	NSG 7572	4428
32	UNIV OF WASHINGTON	Warner, J L	JSC	Adams, J D	NSG 9032	4564
32	UNIV OF WASHINGTON	Vitale, J A	HQ-ET	Adams, J B	NAGW 85	4533
32	UNIV OF WASHINGTON	Quaide, W L	HQ-SL	Adams, J B	NSG 7173	4560
32	UNIV OF WASHINGTON	Quaide, W L	HQ-SL	McCallum, I S	NSG 7313	4561
32	UNIV WISC-MADISON	Oseroff, H	GSFC	Bentley, C R	NAS 5-25977	4607
32	UNIV OF WYOMING	Quaide, W L	HQ-SL	Shive, P N	NAGW 174	4639
32	UTAH STATE UNIV	Devincenzi, D L	HQ-SB	Smith, G G	NSG 7038	4299
32	VA MILITARY INST	Quaide, W L	HQ-SL	Schrieber, H D	NAGW 213	4432
32	VA MILITARY INST	Quaide, W L	HQ-SL	Schneber, H D	NSG 7355	4433
32	VIRGINIA POLY INST	Masouka, E	GSFC	Haralick, R	NAG 5-131	4466
32	WASHINGTON ST UNIV	French, B M	HQ-SL	Srinivasan, B	NAGW 234	4567
32	WASHINGTON UNIVERSTY	Broderick, J C	GSFC	Arvidson, R E	NAS 5-26533	3151
32	WASHINGTON UNIVERSTY	Warner, J L	JSC	Haskin, L A	NSG 9055	3165
32	WASHINGTON UNIVERSTY	Quaide, W L	HQ-SL	Haskin, L A	NAGW 179	3149
32	WASHINGTON UNIVERSTY	Quaide, W L	HQ-SL	Hohenberg, C M	NSG 7016	3159
32	WASHINGTON UNIVERSTY	Boyce, J M	HQ-SL	Arvidson, R E	NSG 7087	3160
32	WASHINGTON UNIVERSTY	Boyce, J M	HQ-SL	Arvidson, R E	NSG 7545	3163
32	WASHINGTON UNIVERSTY	Quaide, W L	HQ-SL	Goettal, K A	NSG 7578	3164
32	WOODSHOLE OCEAN INST	Fimmel, R O	ARC	Bowin, C O	NAG 2-91	2969
32	WOODSHOLE OCEAN INST	Smith, D E	GSFC	Brown, C	NAG 5-18	2971



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32	WOODSHOLE OCEAN INST	Rao, D B	GSFC	Gaddy, G T	NAG 5-185	2972
32	YALE UNIVERSITY	Quaide, W L	HQ-SL	Longhi, J	NAGW 175	2009
33	CITY COLLEGE OF N Y	Schroeder, L C	LARC	Pierson, W J	NAS 1-15669	3303
33	FLORIDA STATE UNIV	Chase, R P	HQ-EB	Clark, A J	NAGW 221	2110
33	FLORIDA STATE UNIV	Chase, R P	HQ-EB	O'Brien, J J	NGT 10-004-800	2113
33	HARVARD UNIVERSITY	Halem, M	GSFC	Robinson, A R	NSG 5228	2802
33	HARVARD UNIVERSITY	Leito, C D	WFC	Robinson, A R	NAS 6-3182	2785
33	HARVARD UNIVERSITY	Toth, R A	HQ-EB	McElroy, M	NASW 2952	2788
33	JOHNS HOPKINS UNIV	Huang, N E	WFC	Phillips, O M	NAS 6-2993	2606
33	JOHNS HOPKINS UNIV	Huang, N E	WFC	Phillips, O M	NAS 6-3162	2607
33	LA ST U&A&M COL-BRGE	Carter, C H	HQ-LC	Rouse, L J	NGT 19-001-800	2572
33	MASS INST OF TECH	Leitao, C D	WFC	Wunch, C	NAG 6-9	2855
33	MASS INST OF TECH	Chase, R P	HQ-EB	Harrison, D E	NGT 22-009-900	2911
33	NO CAROLINA STATE U	Huang, N E	WFC	Tung, C	NAS 6-3018	3545
33	NOVA UNIVERSITY	Kirk, R G	GSFC	Witte, J M	NAS 5-26714	2117
33	OLD DOMINION UNIV	Schroeder, L C	LARC	Stoughton, J W	NAG 1-111	4351
33	OLD DOMINION UNIV	Croswell, W F	LARC	Oertel, G F	NAG 1-189	4357
33	STATE U NY-STONY BRK	Esaias, W E	LARC	Wilson, R E	NAS 1-16607	3482
33	TEXAS A&M UNIVERSITY	Huang, N	WFC	Ichije, T	NAS 6-2884	4097
33	UNIV CALIF-SAN DIEGO	Oakes, A	GSFC	Austin, R W	NAS 5-26249	1721
33	UNIV CALIF-SAN DIEGO	Esaias, W E	LARC	Smith, R C	NSG 1641	1743
33	UNIV CALIF-SAN DIEGO	Hoge, F E	WFC	Smith, R C	NAG 6-14	1704
33	UNIV OF KANSAS	Schroeder, L C	LARC	Shanmugam, K S	NAG 1-117	2494
33	UNIV OF KANSAS	Schroeder, L C	LARC	Moore, R K	NSG 1397	2527
33	UNIV MD-EASTRN SHORE	Huang, N E	WFC	Dudis, J J	NSG 6025	2746
33	UNIV OF MIAMI	McClain, C R	GSFC	Williams, F	NSG 5344	2173
33	UNIV OF MIAMI	Hoge, F E	WFC	Zika, R G	NAG 6-13	2162
33	UNIV OF RHODE ISLAND	Campbell, J W	LARC	Spaulding, M L	NSG 1495	3965
33	UNIV OF WASHINGTON	Rao, D B	GSFC	Rothrock, D A	NAG 5-160	4520
33	UNIV OF WASHINGTON	Rao, D B	GSFC	Martin, S	NAG 5-161	4521
33	UNIV OF WASHINGTON	Jones, W L	LARC	Brown, R A	NAG 1-149	4512
33	UNIV OF WASHINGTON	Huang, N E	WFC	Katsaros, K B	NAS 6-2996	4540
33	UNIV WISC-MADISON	Schroeder, L C	LARC	Hinton, B B	NAG 1-118	4582
33	UNIV WISC-MILWAUKEE	Rao, D B	GSFC	Mortimer, C H	NAG 5-209	4636
33	WOODSHOLE OCEAN INST	Halem, M	GSFC	Haidvogel, D B	NAG 5-8	2970
33	WOODSHOLE OCEAN INST	Allario, F	LARC	Joyce, T M	NAG 1-91	2968
33	WOODSHOLE OCEAN INST	Saias, W E	LARC	Beardsley, R C	NAS 1-16606	2974
33	WOODSHOLE OCEAN INST	Hoge, F E	WFC	Zafirou, O C	NAS 6-3166	2976
33	WOODSHOLE OCEAN INST	McGoldrick, L F	HQ-EB	Hollister, C D	NGT 22-014-800	2977
39	ALABAMA A&M UNIV	Smith, A D	MSFC	Montgomery, O L	NSG 8066	1006
39	ALABAMA A&M UNIV	Mooneyhan, D W	NSTL	Montgomery, O L	NAG 8-1	1000
39	ALABAMA A&M UNIV	Mooneyhan, D W	NSTL	Montgomery, O L	NAG 8-13	1001
39	ATHENS STATE COLLEGE	Reeves, F A	MSFC	Holland, L R	NAS 8-34432	1010
39	BOSTON COLLEGE	Birmingham, T J	HQ-SC	Carovillano, R L	NSG 7468	2751
39	BRIGHAM YOUNG UNIV	Gordon, F	GSFC	Miller, W	NAS 5-26473	4268
39	CAL POLY ST U-S LUIS	Peterson, D L	ARC	Pillsbury, N	NCA 2-678001	1312
39	COLORADO STATE UNIV	Nelsen, E D	GSFC	Vonderhaar, T H	NAS 5-22959	1892
39	CORNELL UNIVERSITY	Wydeven, T	ARC	Shuler, M L	NSG 2408	3375
39	CORNELL UNIVERSITY	Vitale, J A	HQ-ET	Philipson, W R	NGL 33-010-171	3362
39	FORT VALLEY STATE C	Wolverton, B C	NSTL	Brown, N B	NSG 735	2183
39	GEORGIA INST OF TECH	Szajna, E F	GSFC	Cunwold, D M	NAS 5-25817	2205
39	HAMPTON INSTITUTE	Harris, R C	LARC	Leung, W H	NAG 1-122	4330
39	HAMPTON INSTITUTE	Katzberg, S J	LARC	Tai, M H	NAG 1-161	4331
39	HAMPTON INSTITUTE	Poole, L R	LARC	Venable, D D	NCC 1-11	4337
39	HOWARD UNIVERSITY	Okeefe, J A	GSFC	Thorpe, A M	NAS 5-25185	2077
39	HUMBOLDT STATE UNIV	Weinstein, R H	HQ-ET	Hankins, D B	NSG 7525	1333
39	HUMBOLDT STATE UNIV	Carter, C H	HQ-LC	Fox, L , III	NGT 05-060-800	1332
39	JACKSON STATE UNIV	Wolverton, B C	NSTL	Shores, F	NSG 8026	3103

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
39	MASS INST OF TECH	Wang, J R	GSFC	Kong, J A	NAG 5-141	2850
39	MICHIGAN STATE UNIV	Vitale, J A	HQ-ET	Boylan, M G	NGL 23-004-083	2986
39	MISSISSIPPI STATE U	Vitale, J A	HQ-ET	Miller, W F	NGL 25-001-054	3113
39	MONTANA STATE UNIV	Ravet, F W	JSC	Caprio, J M	NAS 9-16007	3167
39	MORGAN STATE UNIV	Tucker, C J	GSFC	Fan, C J	NAG 5-12	2625
39	NEW MEX ST U-LAS CR	Fenner, R G	JSC	Carver, K	NAS 9-95509	3279
39	NEW MEX ST U-LAS CR	Krishen, K	JSC	Carver, K R	NAS 9-95514	3280
39	NEW MEX ST U-LAS CR	Krishen, K	JSC	Blevins, B	NAS 9-95519	3281
39	NEW MEX ST U-LAS CR	Nitschke, H A	JSC	Waterman, A	NAS 9-95522	3282
39	OLD DOMINION UNIV	Browne, T D	JSC	Chhikara, R S	NAS 9-16431	4364
39	OLD DOMINION UNIV	Reichle, H G	LARC	Kinole, E C	NCC 1-34	4371
39	OREGON STATE UNIV	Wilson, D E	ARC	Isaacson, D L	NCA 2-586101	3793
39	OREGON STATE UNIV	Vitale, J A	HQ-ET	Schrumpf, B J	NGL 38-002-053	3795
39	PAN AMERICAN UNIV	Pitts, D E	JSC	Lemaster, E W	NSG 9033	4045
39	PENN STATE U-UNIV PK	Schmugge, T J	GSFC	Carlson, T N	NAG 5-184	3867
39	PENN STATE U-UNIV PK	Irons, J	GSFC	Petersen, G W	NAS 5-25667	3872
39	PRAIRIE VIEW A&M U	Browne, I D	JSC	Brams, E A	NSG 9006	4051
39	PURDUE UNIVERSITY	Pitts, D	JSC	Bauer, M E	NAS 9-15466	2414
39	SO DAKOTA STATE UNIV	Schmugge, T J	GSFC	Harlan, J C	NSG 5396	3984
39	SO DAKOTA STATE UNIV	Vitale, J A	HQ-ET	Myers, V I	NGL 42-003-007	3983
39	STANFORD UNIVERSITY	Roberson, F	HQ-ET	Dunn, D	NASW 3204	1427
39	STATE UNIV NY-ALBANY	Weinberg, I	LERC	Corbett, J W	NSG 3095	3461
39	STATE UNIV NY-ALBANY	Vaughn, O H, Jr	MSFC	Vonnegut, B	NAS 8-32893	3452
39	ST U NY COL-ONEONTA	Kerber, A G	GSFC	Baumann, P R	NAS 5-25967	3507
39	TEXAS A&M UNIVERSITY	Schmugge, T J	GSFC	Miller, L D	NCC 5-15	4122
39	TEXAS A&M UNIVERSITY	Blanchard, D	JSC	Randall, J D	NAS 9-14828	4108
39	TEXAS A&M UNIVERSITY	Browne, I D	JSC	Guseman, L F, Jr	NAS 9-16447	4117
39	TEXAS A&M UNIVERSITY	Vitale, J A	HQ-ET	Blanchard, B J	NGL 44-001-001	4123
39	UNIV ALA-HUNTSVILLE	Rutland, C M	MSFC	Proffitt, S	NAS 8-33889	1057
39	UNIV ALASKA-FAIRBNKS	Wilson, D E	ARC	George, T H	NCA 2-20002	1086
39	UNIV ALASKA-FAIRBNKS	Vitale, J A	HQ-ET	Miller, J M	NGL 02-001-092	1088
39	UNIV OF ARIZONA	Musick, H B	NSTL	Hutchinson, C F	NAS13-172	1182
39	UNIV OF ARIZONA	Vitale, J A	HQ-ET	Johnson, J D	NGL 03-002-313	1187
39	UNIV ARKANSAS-FAYETV	Schmugge, T	GSFC	Waite, W P	NAG 5-20	1225
39	UNIV CALIF-BERKELEY	Toon, O B	ARC	Granger, O	NCA 2-50004	1561
39	UNIV CALIF-BERKELEY	Linlor, W. I	ARC	Angelakos, D	NCA 2-50006	1562
39	UNIV CALIF-BERKELEY	Norman, S M	ARC	Colwell, R N	NCA 2-50103	1565
39	UNIV CALIF-BERKELEY	Browne, I D	JSC	Colwell, R N	NAS 9-14565	1558
39	UNIV CALIF-BERKELEY	Vitale, J A	HQ-ET	Colwell, R N	NGL 05-003-404	1578
39	UNIV CALIF-BERKELEY	Vitale, J A	HQ-ET	Colwell, R N	NSG 7220	1598
39	UNIV CALIF-BERKELEY	Quaide, W L	HQ-SL	Anderson, K A	NSG 7127	1595
39	UNIV CALIF-DAVIS	Cagliostro, D E	ARC	Smith, J M	NAG 2-129	1605
39	UNIV CALIF-DAVIS	Rango, A	GSFC	Algazi, V R	NSG 5092	1612
39	UNIV CALIF-L ANGELES	Mayr, H G	HQ-SC	Coleman, P J, Jr	NGL 05-007-004	1658
39	UNIV CALIF-SAN DIEGO	Smith, D E	GSFC	Berger, J	NGR 05-009-246	1742
39	UNIV CALIF-SAN DIEGO	Stevens, N J	LERC	Whipple, E C	NAG 3-152	1698
39	UNIV CALIF-S BARBARA	Peterson, D L	ARC	Strahler, A H	NCC 2-157	1795
39	UNIV CALIF-S BARBARA	Rango, A	GSFC	Dozier, J	NSG 5262	1801
39	UNIV CALIF-S BARBARA	Carter, C H	HQ-LC	Strahler, A	NGT 05-010-800	1798
39	UNIV OF CENTRAL FLA	Knott, W B	KSC	Madsen, B C	NAS10-9841	2122
39	UNIV COLORADO-BOLDR	Jones, C T	MSFC	Toomre, J	NAS 8-31958	1947
39	UNIV COLORADO-BOLDR	Vitale, J A	HQ-ET	Ives, J D	NGL 06-003-200	1952
39	UNIV OF DELAWARE	Gervin, J. C	GSFC	Klemas, V	NAS 5-26254	2021
39	UNIV OF DELAWARE	Carter, C H	HQ-LC	Wu, J.	NGT 08-001-800	2023
39	UNIV OF DENVER	Kunde, V G	GSFC	Goldman, A	NAS 5-26364	1982
39	UNIV OF DENVER	Seals, R K	LARC	Murcay, D G	NSG 1432	1989
39	UNIV DIST COLUMBIA	Gross, F C	GSFC	Phelps, H L	NGR 09-050-019	2095
39	UNIV DIST COLUMBIA	Ruttberg, A P	GSFC	Lessin, I	NGR 09-053-003	2096

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
39	UNIV OF FLORIDA	Horn, F W	KSC	Blazquez, C H	NAS10-9666	2140
39	UNIV OF FLORIDA	Vitale, J A	HQ-ET	Ruth, B E	NSG 7236	2159
39	UNIV OF GEORGIA	Butera, M K	NSTL	Cooley, J L	NAS13-137	2238
39	UNIV OF IOWA	Fishman, J	LARC	Carmichael, G R	NAG 1-36	2459
39	UNIV OF KANSAS	Schmugge, T	GSFC	Ulaby, F T	NAG 5-30	2505
39	UNIV OF KANSAS	Jones, W L	LARC	Onstott, R G	NCC 1-51	2520
39	UNIV OF KANSAS	Vitale, J A	HQ-ET	Barr, B G	NGL 17-004-024	2526
39	UNIV MARYLAND-COL PK	Rango, A	GSFC	Ragan, R M	NAG 5-9	2638
39	UNIV MARYLAND-COL PK	Uccellini, L W	GSFC	Pitter, R L	NAG 5-133	2645
39	UNIV MARYLAND-COL PK	Trombka, J I	GSFC	Sommer, S E	NAS 5-23457	2663
39	UNIV MARYLAND-COL PK	Gervin, J C	GSFC	Ragan, R M	NAS 5-26650	2676
39	UNIV MARYLAND-COL PK	Vitale, J A	HQ-ET	Ragan, R M	NAGW 33	2655
39	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Rodenhuis, D R	NGT 21-002-809	2712
39	UNIV MD-EASTRN SHORE	Trafford, G H	WFC	Gupta, G C	NSG 6034	2748
39	UNIV OF MIAMI	Gibbs, B P	ARC	Brown, O	NCA 2-438101	2169
39	UNIV MICH-ANN ARBOR	Miller, E R	MSFC	Shyn, T W	NAS 8-32661	3040
39	U MINN-MNPLS-ST PAUL	Whitehead, V	JSC	Lillesand, T M	NAS 9-16427	3084
39	U MINN-MNPLS-ST PAUL	Vitale, J A	HQ-ET	Hobbie, R K	NGL 24-005-263	3087
39	U MINN-MNPLS-ST PAUL	King, J H	HQ-SC	Winckler, J R	NSG 7005	3095
39	UNIV MO-COLUMBIA	Schmugge, T J	GSFC	Rouse, J W	NSG 5338	3133
39	UNIV MO-COLUMBIA	Harnage, M J	JSC	Rouse, J W	NAS 9-15896	3130
39	UNIV MO-COLUMBIA	Vitale, J A	HQ-ET	Johannsen, C J	NAGW 46	3125
39	UNIV NEBRASKA-LINCLN	Vitale, J A	HQ-ET	Carlson, M P	NGL 28-004-020	3173
39	UNIV NEBRASKA-LINCLN	Carter, C H	HQ-LC	Blad, B L	NGT 28-004-800	3175
39	UNIV N CAR-CHPL HILL	Harriss, R C	LARC	Martens, C S	NAG 1-181	3559
39	UNIV OF SANTA CLARA	Jones, H W	ARC	Danielson, R L	NCA 2-685101	1833
39	UNIV SO CAROLINA-COL	Vitale, J A	HQ-ET	Roberson, R E	NSG 7504	3980
39	UNIV TENNESSEE-KNOXV	Anderson, B J	MSFC	Carter, J M	NAS 8-32611	4001
39	UNIV TENNESSEE-KNOXV	Daniel, J L	MSFC	Shahrokhi, F	NAS 8-33218	4004
39	UNIV OF UTAH	Vitale, J A	HQ-ET	Ursenbach, W O	NAGW 95	4276
39	UNIV OF UTAH	Vitale, J A	HQ-ET	Ridd, M K	NSG 7226	4282
39	UNIV OF WASHINGTON	Wilson, D E	ARC	Shinn, R D	NCA 2-850001	4545
39	UNIV OF WASHINGTON	Wilson, D E	ARC	Westerlund, F V	NCA 2-850002	4546
39	UNIV OF WASHINGTON	Lumb, D R	ARC	Shinn, R D	NCA 2-850101	4547
39	UNIV WISC-MADISON	Thiele, O W	GSFC	Suomi, V E	NAS 5-26345	4610
39	UNIV WISC-MADISON	Middleton, E M	GSFC	Scarpace, F L	NAS 5-26423	4611
39	UNIV WISC-MADISON	Vitale, J A	HQ-ET	Kiefer, R W	NGL 50-002-127	4624
39	VIRGINIA POLY INST	Gervin, J C	GSFC	Munday, J	NAS 5-26199	4473
39	VIRGINIA POLY INST	Hypes, W D	LARC	Giles, H, Jr	NAG 1-188	4454
39	VIRGINIA POLY INST	Tenney, D R	LARC	Unnam, J	NCC 1-10	4478
39	WASHINGTON ST UNIV	Wilson, D E	ARC	Krebs, L T	NCA 2-840001	4568
39	WASHINGTON UNIVERSTY	Weinstein, R H	HQ-ET	Eastwood, L F	NASW 3331	3154
39	WOODSHOLE OCEAN INST	McGoldrick, L F	HQ-EB	Spencer, D W	NAGW 241	2973
39	XAVIER UNIV-LA	Espy, P N	MSFC	Ioup, J	NSG 8050	2584
41	ARIZONA STATE UNIV	Hippensteele, S A	LERC	Metzger, D E	NSG 3075	1114
41	BOSTON UNIVERSITY	Yates, E C, Jr	LARC	Morino, L	NGR 22-004-030	2756
41	BOSTON UNIVERSITY	Carter, C H	HQ-LC	Morino, L	NGT 22-004-800	2757
41	BOSTON UNIVERSITY	Carter, C H	HQ-LC	Morino, L	NGT 22-004-801	2758
41	BOSTON UNIVERSITY	Carter, C H	HQ-LC	Morino, L	NGT 22-004-802	2759
41	BOSTON UNIVERSITY	Carter, C H	HQ-LC	Udelson, D	NGT 22-008-803	2760
41	BROWN UNIVERSITY	Townsend, J C	LARC	Sirovich, L	NSG 1617	3958
41	BROWN UNIVERSITY	Carter, C H	HQ-LC	Doeppner, T W, Jr	NGT 40-002-800	3957
41	CALIF INST OF TECH	Houbolt, J C	LARC	Culick, F E	NAS 1-15668	1257
41	CALIF INST OF TECH	Starns, J H, Jr	LARC	Knauss, W G	NSG 1483	1289
41	CALIF INST OF TECH	Tacina, R	LERC	Marble, F E	NAG 3-70	1233
41	CAL POLY ST U-POMONA	Christiansen, R S	ARC	Lord, P A	NAG 2-49	1307
41	CAL POLY ST U-S LUIS	Talbot, P D	ARC	Sandlin, D R	NAG 2-61	1308
41	CAL POLY ST U-S LUIS	Magee, J P	ARC	Grimes, J E	NAS 2-10364	1311

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41	CAL POLY ST U-S LUIS	Koenig, D G	ARC	Hoffmann, J A	NSG 2391	1315
41	CAL POLY ST U-S LUIS	Myers, L P	DFRC	Carpenter, T W	NAG 4-4	1309
41	CAL POLY ST U-S LUIS	Albers, J. A.	DFRC	Sandlin, D R	NCC 4-1	1314
41	CASE WESTERN RESERVE	Hingst, W R	LERC	Greber, I	NAG 3-61	3574
41	CASE WESTERN RESERVE	Hingst, W R	LERC	Greber, I	NAG 3-102	3580
41	CASE WESTERN RESERVE	Bishop, A R	LERC	Reshotko, E	NAG 3-140	3583
41	CASE WESTERN RESERVE	Riddlebaugh, S M	LERC	Greber, I	NAG 3-171	3586
41	CASE WESTERN RESERVE	Sockol, P M	LERC	Reshotko, E	NCC 3-4	3601
41	CASE WESTERN RESERVE	Bishop, A R	LERC	Reshotko, E	NGR 36-027-064	3603
41	CASE WESTERN RESERVE	Riddlebaugh, S M	LERC	Greber, I	NSG 3206	3610
41	CASE WESTERN RESERVE	Anderson, B H	LERC	Parke, F I	NSG 3207	3611
41	CASE WESTERN RESERVE	Hingst, W R	LERC	Greber, I	NSG 3211	3612
41	CASE WESTERN RESERVE	Hingst, W R	LERC	Greber, I	NSG 3271	3619
41	CITY COLLEGE OF N Y	Boldman, D R	LERC	Raj, R	NAG 3-122	3299
41	COLLEGE OF WM & MARY	Bushnell, D M	LARC	Zang, T A	NAG 1-109	4310
41	COLORADO STATE UNIV	Sockol, P M	LERC	Sadeh, W Z	NSG 3127	1900
41	COLUMBIA UNIVERSITY	Harris, R L	LARC	Galanter, E	NCC 1-5	3330
41	COLUMBIA UNIVERSITY	Mixson, J S	LARC	Vaicaitis, R	NSG 1450	3336
41	CORNELL UNIVERSITY	Tauber, M E	ARC	Caughey, D A	NAG 2-13	3344
41	CORNELL UNIVERSITY	Chapman, G T	ARC	Lumley, J L	NSG 2382	3374
41	CORNELL UNIVERSITY	Farassat, F	LARC	George, A R	NAG 1-107	3342
41	CORNELL UNIVERSITY	Johnson, G M	LERC	Caughey, D A	NAG 3-19	3346
41	CORNELL UNIVERSITY	Marek, C J	LERC	Gouldin, F C	NSG 3019	3377
41	DREXEL UNIVERSITY	Price, D B	LARC	Calise, A J	NSG 1496	3832
41	DREXEL UNIVERSITY	Humenik, F	LERC	Cernansky, N P	NAG 3-1	3821
41	EMBRY-RIDDLE AERO U	Aaron, J B	WFC	Gandelman, J	NAS 6-3040	2100
41	FLORIDA STATE UNIV	Stone, J R	LERC	Tam, C K	NAG 3-182	2108
41	GEORGE WASHINGTON U	Chapman, G T	ARC	Hafez, M M	NAG 2-40	2040
41	GEORGE WASHINGTON U	Demarais, R N	LARC	Liebowitz, H	NAG 1-13	2034
41	GEORGE WASHINGTON U	Harris, R V	LARC	Liebowitz, H	NAG 1-136	2035
41	GEORGE WASHINGTON U	Abel, I	LARC	Liebowitz, H	NAG 1-199	2039
41	GEORGE WASHINGTON U	Duberg, J E	LARC	Liebowitz, H	NAS 1-14605	2042
41	GEORGE WASHINGTON U	Chestnut, D	LARC	Liebowitz, H	NCC 1-14	2045
41	GEORGE WASHINGTON U	Foughner, J T., Jr	LARC	Liebowitz, H	NCC 1-24	2047
41	GEORGE WASHINGTON U	Suit, W T	LARC	Liebowitz, H	NCC 1-29	2048
41	GEORGE WASHINGTON U	Prior, E J	LARC	Liebowitz, H	NCC 1-44	2051
41	GEORGE WASHINGTON U	Hohl, F	LARC	Liebowitz, H	NCC 1-47	2052
41	GEORGE WASHINGTON U	McComb, H G	LARC	Liebowitz, H	NGR 09-010-078	2053
41	GEORGE WASHINGTON U	Morgan, H G	LARC	Liebowitz, H	NGR 09-010-085	2054
41	GEORGE WASHINGTON U	Harvey, W D.	LARC	Liebowitz, H	NSG 1585	2059
41	GEORGIA INST OF TECH	Scheiman, J	LARC	McMahon, H M	NAG 1-40	2184
41	GEORGIA INST OF TECH	Lester, H C	LARC	Zinn, B T	NAG 1-133	2187
41	GEORGIA INST OF TECH	Berry, J D	LARC	Pierce, G A	NAS 1-16222	2199
41	GEORGIA INST OF TECH	Berry, J D	LARC	Pierce, G A	NAS 1-16817	2202
41	GEORGIA INST OF TECH	Saule, A V	LERC	Zinn, B T	NAG 3-67	2192
41	GEORGIA INST OF TECH	Phillips, B R	LERC	Zinn, B T	NAG 3-96	2194
41	GEORGIA INST OF TECH	Baumeister, K J	LERC	Zinn, B T	NSG 3036	2225
41	GEORGIA INST OF TECH	Sockol, P M	LERC	Johnston, W A	NSG 3260	2228
41	GEORGIA INST OF TECH	McFarland, E R	LERC	Wu, J	NSG 3307	2229
41	HAMPTON INSTITUTE	Samms, K H	LARC	Wiggs, J F	NAG 1-69	4328
41	HAMPTON INSTITUTE	Beckwith, I E	LARC	Anyiwo, J C	NAS 1-15877	4333
41	HAMPTON INSTITUTE	Jewel, J W	LARC	Williams, E	NAS 1-16429	4334
41	HARVARD UNIVERSITY	Warmbrodt, W	ARC	McKinney, P	NCC 2-39	2791
41	HARVARD UNIVERSITY	Doolin, B F	ARC	Byrnes, C I	NSG 2265	2799
41	HOWARD UNIVERSITY	Barrowman, J S	GSFC	Fan, D	NAS 5-24242	2075
41	HOWARD UNIVERSITY	Dunning, R S	LARC	Choudhury, A K	NAG 1-130	2062
41	ILL INST OF TECH	Starnes, J H, Jr	LARC	Haftka, R T	NAG 1-5	2278
41	ILL INST OF TECH	Scheiman, J	LARC	Tan-atichat, J	NAG 1-74	2279

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41	ILL INST OF TECH	Adelman, H M	LARC	Haftka, R T	NSG 1266	2280
41	ILL INST OF TECH	Hefner, J N	LARC	Nagib, H M	NSG 1591	2281
41	ILL INST OF TECH	Groeneweg, J F	LERC	Nagib, H M	NSG 3220	2282
41	IND U-PURDUE-INDAPLS	Sockol, P M	LERC	Bodonyi, R J	NSG 3183	2394
41	IND U-PURDUE-INDAPLS	Chima, R U	LERC	Ecer, A	NSG 3294	2395
41	IOWA STATE UNIV	Olson, L E	ARC	James, W D	NAG 2-30	2439
41	IOWA STATE UNIV	Presley, L L	ARC	Cook, W J	NAG 2-106	2440
41	IOWA STATE UNIV	Corsiglia, V R	ARC	Vogel, J M	NCC 2-19	2450
41	IOWA STATE UNIV	Rakich, J U	ARC	Tannehill, J C	NGR 16-002-038	2451
41	IOWA STATE UNIV	Malcolm, G N	ARC	James, W D	NSG 2091	2457
41	IOWA STATE UNIV	Salas, M D	LARC	Anderson, D A	NCC 1-17	2449
41	IOWA STATE UNIV	Graves, R A	HQ-RT	Anderson, D A	NGT 16-002-801	2453
41	ISRAEL INST OF TECH	Schiff, L B	ARC	Katz, J	NAGW 218	4660
41	JOHNS HOPKINS UNIV	Rubesin, M W	ARC	Corrsin, S	NSG 2303	2619
41	JOHNS HOPKINS UNIV	Carter, C H	HQ-LC	Daidsen, A F	NGT 21-001-800	2615
41	LEHIGH UNIVERSITY	Batterton, P G	LERC	Rockwell, D O	NSG 3162	3848
41	MASS INST OF TECH	Piziali, R A	ARC	Miller, R H	NAG 2-47	2824
41	MASS INST OF TECH	Presley, L	ARC	Murman, E M	NAG 2-105	2829
41	MASS INST OF TECH	Chapman, G T	ARC	Murman, E M	NAG 2-115	2830
41	MASS INST OF TECH	Nagel, D C	ARC	Simpson, R W	NAS 2-10720	2872
41	MASS INST OF TECH	Johnson, W R	ARC	Widnall, S E	NSG 2142	2920
41	MASS INST OF TECH	Johnson, W R	ARC	Ham, N D	NSG 2266	2921
41	MASS INST OF TECH	Gloersen, P	GSFC	Staelin, D H	NAS 5-22929	2874
41	MASS INST OF TECH	Bland, S R	LARC	Harris, W L	NAG 1-60	2815
41	MASS INST OF TECH	Montgomery, R C	LARC	Vandervelde, W	NAG 1-126	2819
41	MASS INST OF TECH	Kelley, J R	LARC	Athans, M	NAG 1-140	2820
41	MASS INST OF TECH	Kilgore, R A	LARC	Covert, E E	NAG 1-206	2822
41	MASS INST OF TECH	Hubbard, H H	LARC	Ingard, K V	NAS 1-15154	2868
41	MASS INST OF TECH	Maddalon, D V	LARC	Taneja, N K	NAS 1-15268	2869
41	MASS INST OF TECH	Harris, R L	LARC	Tole, J R	NCC 1-23	2891
41	MASS INST OF TECH	Dwoyer, D L	LARC	Abarbanel, S S	NCC 1-45	2892
41	MASS INST OF TECH	Downing, D R	LARC	Simpson, R W	NGL 22-009-640	2901
41	MASS INST OF TECH	Boyd, R P	LARC	Covert, E E	NSG 1502	2915
41	MASS INST OF TECH	Chima, R V	LERC	Thompkins, W T	NAG 3-9	2834
41	MASS INST OF TECH	Cassidy, J F	LERC	Haywood, J B	NAG 3-82	2836
41	MASS INST OF TECH	Kielb, R E	LERC	Crawley, E F	NAG 3-200	2839
41	MASS INST OF TECH	Kielb, R E	LERC	Dugunkji, J	NAG 3-214	2840
41	MASS INST OF TECH	Gorrell, W T	LERC	Covert, E E	NGL 22-009-383	2898
41	MASS INST OF TECH	Chamis, C C	LERC	Witmer, E A	NGR 22-009-339	2904
41	MASS INST OF TECH	Adamczyk, J J	LERC	Kerrebrock, J L	NSG 3079	2926
41	MASS INST OF TECH	Adamczyk, J J	LERC	Greitzer, E M	NSG 3208	2929
41	MASS INST OF TECH	Janetzke, D C	LERC	Dugundji, J	NSG 3303	2932
41	MASS INST OF TECH	Bishop, A R	LERC	Thompkins, W T	NSG 3309	2933
41	MASS INST OF TECH	Graves, R A, Jr	HQ-RT	Murman, E M	NGT 22-009-901	2912
41	MICHIGAN STATE UNIV	Rubesin, M W	ARC	Foss, J F	NAG 2-86	2980
41	MISSISSIPPI STATE U	Holmes, B J	LARC	Bull, G	NAG 1-3	3104
41	MISSISSIPPI STATE U	Thames, F C	LARC	Thompson, J F	NGR 25-001-055	3114
41	MISSISSIPPI STATE U	Stewart, E C	LARC	Bennett, A G	NSG 1249	3115
41	MISSISSIPPI STATE U	Thomas, J L	LARC	Bennett, A G	NSG 1623	3117
41	MISSISSIPPI STATE U	Mitchell, G A	LERC	Bennett, A G	NAG 3-56	3105
41	MONTANA STATE UNIV	Horstman, C C	ARC	Demetriades, A	NAG 2-37	3166
41	NEW YORK UNIVERSITY	Hicks, R M	ARC	Garabedian, P R	NGR 33-016-201	3406
41	NEW YORK UNIVERSITY	Maestrello, L	LARC	Grossmann, W	NAG 1-155	3396
41	NEW YORK UNIVERSITY	Graves, R A, Jr	HQ-RT	Garabedian, P R	NGT 33-016-800	3407
41	NO CAROLINA STATE U	Kurtenbach, F J	DFRC	Smetana, F O	NSG 4025	3558
41	NO CAROLINA STATE U	South, J C	LARC	Hassan, H A	NCC 1-22	3546
41	NO CAROLINA STATE U	Wurster, K E	LARC	Dejarnette, F R	NCC 1-35	3547
41	NO CAROLINA STATE U	Campbell, J F	LARC	Dejarnette, F R	NCC 1-46	3548

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41	NO CAROLINA STATE U	Brooks, T F	LARC	Hodgson, T H	NSG 1377	3554
41	NO CAROLINA STATE U	Holbrook, G T	LARC	Smetana, F O	NSG 1584	3556
41	NO CAROLINA STATE U	Huang, D	LERC	Boles, M A	NAG 3-89	3541
41	NO CAROLINA STATE U	Stone, J R	LERC	Nagel, R T	NAG 3-189	3542
41	OHIO STATE UNIV	Stroub, R. H	ARC	Velkoff, H R	NCA 2-565001	3673
41	OHIO STATE UNIV	Holst, T L	ARC	Nakamura, S	NCA 2-565101	3674
41	OHIO STATE UNIV	Stroub, R H	ARC	Velkoff, H R	NCA 2-565102	3675
41	OHIO STATE UNIV	Holst, T L	ARC	Nakamura, S	NCA 2-565901	3676
41	OHIO STATE UNIV	McGhee, R J	LARC	Gregorek, G M	NAS 1-14406	3666
41	OHIO STATE UNIV	Greene, G C	LARC	Gregorek, G M	NAS 1-15680	3667
41	OHIO STATE UNIV	Bergeron, H P	LARC	Weislogel, G S	NAS 1-15969	3668
41	OHIO STATE UNIV	Holmes, B J	LARC	Gregorek, G M	NAS 1-16388	3669
41	OHIO STATE UNIV	Holmes, B J	LARC	Gilson, R D	NSG 1620	3680
41	OHIO STATE UNIV	Everhart, J L	LARC	Burggraf, O R	NSG 1622	3681
41	OHIO STATE UNIV	Shaw, R J	LERC	Gregorek, G M	NAG 3-28	3658
41	OHIO STATE UNIV	Shaw, J	LERC	Korkan, K D	NAG 3-109	3660
41	OHIO STATE UNIV	Bober, L J	LERC	Korkan, K D	NAG 3-118	3661
41	OHIO STATE UNIV	Mitchell, G A	LERC	Gregorek, G M	NSG 3247	3688
41	OHIO UNIVERSITY	Adams, J J	LARC	McFarland, R H	NAG 1-124	3695
41	OKLAHOMA STATE UNIV	Steinle, F W	ARC	Reed, T D	NAG 2-76	3762
41	OKLAHOMA STATE UNIV	Miller, S A	ARC	Wiggins, K E	NAS 2-10467	3765
41	OKLAHOMA STATE UNIV	Steinle, F W	ARC	Moretti, P M	NSG 2396	3770
41	OKLAHOMA STATE UNIV	Seiner, J M	LARC	McLaughlin, D K	NAG 1-159	3761
41	OKLAHOMA STATE UNIV	Holderman, J D	LERC	Lilley, D G	NAG 3-74	3763
41	OLD DOMINION UNIV	Bushnell, D M	LARC	Grosch, C E	NAG 1-96	4349
41	OLD DOMINION UNIV	Moss, J N	LARC	Tiwari, S N	NAG 1-120	4352
41	OLD DOMINION UNIV	Anyiwo, J C	LARC	Ash, R L	NAG 1-121	4353
41	OLD DOMINION UNIV	Erickson, W D	LARC	Unavailable	NAS 1-15648	4361
41	OLD DOMINION UNIV	Drummond, J. P	LARC	Tiwari, S N	NAS 1-15930	4362
41	OLD DOMINION UNIV	Peterson, J B	LARC	Goglia, G L	NCC 1-9	4366
41	OLD DOMINION UNIV	Hohl, F	LARC	Roberts, A S	NGR 47-003-052	4373
41	OLD DOMINION UNIV	Dixon, S C	LARC	Thornton, E A	NSG 1167	4376
41	OLD DOMINION UNIV	Peterson, J B, Jr	LARC	Kuhlman, J M	NSG 1357	4380
41	OLD DOMINION UNIV	Graves, R A, Jr	LARC	Tiwari, S N	NSG 1464	4382
41	OLD DOMINION UNIV	Creedon, J F	LARC	Tcheng, P	NSG 1480	4383
41	OLD DOMINION UNIV	Bushnell, D M	LARC	Goglia, G L	NSG 1491	4384
41	OLD DOMINION UNIV	Dwoyer, D L	LARC	Cooke, C H	NSG 1517	4385
41	OLD DOMINION UNIV	Yates, E C, Jr	LARC	Kandil, O A	NSG 1560	4386
41	OLD DOMINION UNIV	Lamar, J E.	LARC	Goglia, G L	NSG 1561	4387
41	OLD DOMINION UNIV	Margason, R J	LARC	Barna, P S	NSG 1563	4388
41	OLD DOMINION UNIV	Price, D B	LARC	Mielke, R R	NSG 1650	4391
41	PENN STATE U-UNIV PK	Norum, T D	LARC	Daniel, O H	NAG 1-4	3855
41	PENN STATE U-UNIV PK	Chambers, J R	LARC	McCormick, B W	NAG 1-73	3856
41	PENN STATE U-UNIV PK	Stephens, D G	LARC	Williams, E G	NAG 1-216	3857
41	PENN STATE U-UNIV PK	Fisher, B D	LARC	McCormick, B W	NSG 1308	3897
41	PENN STATE U-UNIV PK	Gatski, T B	LARC	Morris, P J	NSG 1580	3899
41	PENN STATE U-UNIV PK	Shaw, L M.	LERC	Lakshminarayana, B	NSG 3012	3900
41	PENN STATE U-UNIV PK	Sockol, P M	LERC	Lakshminarayana, B	NSG 3032	3901
41	PENN STATE U-UNIV PK	Sockol, D M	LERC	Lakshminarayana, B	NSG 3212	3903
41	PENN STATE U-UNIV PK	Sanger, N L	LERC	Deutsch, S	NSG 3264	3904
41	PENN STATE U-UNIV PK	Englert, G W	LERC	Morris, P J	NSG 3265	3905
41	PENN STATE U-UNIV PK	Sockol, P M	LERC	Lakshminarayana, B	NSG 3266	3906
41	PENN STATE U-UNIV PK	Mehmed, O	LERC	McCormick, B W	NSG 3304	3908
41	PENN STATE U-UNIV PK	Graves, R A	HQ-RT	Lakshminarayana, B	NGT 39-009-802	3895
41	POLY INST OF NY	South, J C, Jr	LARC	Grossman, B	NAG 1-183	3415
41	POLY INST OF NY	Salas, M. D.	LARC	Moretti, G	NSG 1248	3418
41	PRINCETON UNIVERSITY	Hicks, R. M	ARC	Jameson, A	NAG 2-96	3212
41	PRINCETON UNIVERSITY	Talbot, P D	ARC	Curtiss, H C	NAG 2-98	3213

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41	PRINCETON UNIVERSITY	Horstman, C C	ARC	Settles, G S	NAG 2-109	3214
41	PRINCETON UNIVERSITY	Biggers, J	ARC	Miles, R B	NCC 2-94	3234
41	PRINCETON UNIVERSITY	Chyu, W J	ARC	Dowell, E H	NSG 2194	3240
41	PRINCETON UNIVERSITY	Hefner, J N	LARC	Curtiss, H C	NAG 1-108	3210
41	PRINCETON UNIVERSITY	Downing, D R	LARC	Stengel, R F	NAS 1-15758	3225
41	PRINCETON UNIVERSITY	Abbott, T S	LARC	Stengel, R F	NAS 1-15764	3226
41	PRINCETON UNIVERSITY	Downing, D R	LARC	Stengel, R F	NGL 31-001-252	3236
41	PRINCETON UNIVERSITY	Schy, A A	LARC	Stengel, R F	NSG 1587	3238
41	PRINCETON UNIVERSITY	Blanchard, R C	LARC	Bienkowski, G K	NSG 1630	3239
41	PRINCETON UNIVERSITY	Szannislo, A J	LERC	Bracco, F V	NAG 3-8	3215
41	PRINCETON UNIVERSITY	Seidel, R C	LERC	Sweet, L M	NAG 3-110	3216
41	PRINCETON UNIVERSITY	Braun, W H	LERC	Dowell, E H	NSG 3292	3244
41	PRINCETON UNIVERSITY	Hicks, G	HQ-RT	Bogdonoff, S	NAGW 240	3224
41	PURDUE UNIVERSITY	Cozzolongo, J V	ARC	Anderson, D C	NCC 2-146	2418
41	PURDUE UNIVERSITY	Carmichael, R L	ARC	Anderson, D C	NSG 2192	2421
41	PURDUE UNIVERSITY	Berry, D T	DFRC	Schmidt, D K	NAG 4-1	2403
41	PURDUE UNIVERSITY	Mixson, J S	LARC	Crocker, M J	NAG 1-58	2396
41	PURDUE UNIVERSITY	Swanson, R C	LARC	McCarthy, D R	NAG 1-116	2397
41	PURDUE UNIVERSITY	Newsom, J R	LARC	Weisshaar, T A	NAG 1-157	2398
41	PURDUE UNIVERSITY	Lehtinen, B	LERC	Leininger, G G	NAG 3-17	2399
41	PURDUE UNIVERSITY	Steinke, R J	LERC	Murthy, S N	NAG 3-62	2401
41	PURDUE UNIVERSITY	Steinke, R J	LERC	Murthy, S N	NAG 3-204	2402
41	PURDUE UNIVERSITY	Stepka, F S	LERC	L'ecuyer, M R	NSG 3071	2423
41	PURDUE UNIVERSITY	Katsanis, T	LERC	Ragsdell, K M	NSG 3105	2424
41	PURDUE UNIVERSITY	Mitchell, G A	LERC	Sullivan, J P	NSG 3135	2425
41	PURDUE UNIVERSITY	Chamis, C C	LERC	Sun, C T	NSG 3185	2426
41	PURDUE UNIVERSITY	Bosque, M A	LERC	Lefebvre, A H	NSG 3213	2427
41	PURDUE UNIVERSITY	Boldman, D R	LERC	Fleeter, S	NSG 3285	2429
41	PURDUE UNIVERSITY	Bishop, A R	LERC	Hoffman, J D	NSG 3311	2430
41	QUEENSBOROUGH COMM C	Bouge, R K	DFRC	Kousourou, G	NAG 4-2	3421
41	RENSSELAER POLY-NY	Harris, C D	LARC	Nagamatsu, H T	NSG 1624	3444
41	RENSSELAER POLY-NY	Vanfossen, G J	LERC	Mayle, R E	NSG 3262	3447
41	RUTGERS U-N BRUNSWK	Claus, R W	LERC	Johnson, J A	NSG 3280	3260
41	SAN JOSE STATE UNIV	Acree, C W	ARC	Agarwal, R B	NCA 2-675102	1357
41	SAN JOSE STATE UNIV	Bach, R E	ARC	Wang, J C	NCC 2-123	1376
41	SAN JOSE STATE UNIV	Crouse, J E	LERC	Roberts, W B	NAG 3-196	1349
41	STANFORD UNIVERSITY	Chapman, G T	ARC	Cantrell, B	NAG 2-21	1389
41	STANFORD UNIVERSITY	Peterson, V L	ARC	Reynolds, W C	NAG 2-29	1390
41	STANFORD UNIVERSITY	Johnson, D A	ARC	Kline, S J	NAG 2-42	1392
41	STANFORD UNIVERSITY	Rubesin, M W	ARC	Cantwell, B	NAG 2-79	1395
41	STANFORD UNIVERSITY	Koenig, D G	ARC	Karamcheti, K	NAG 2-111	1397
41	STANFORD UNIVERSITY	Soderman, P T	ARC	Karamcheti, K	NAG 2-127	1399
41	STANFORD UNIVERSITY	Lomax, H	ARC	Steger, J L	NCA 2-745005	1429
41	STANFORD UNIVERSITY	Leonard, A	ARC	Baganoff, D	NCA 2-745101	1432
41	STANFORD UNIVERSITY	Warmbrodt, W G	ARC	Karamcheti, K	NCC 2-13	1444
41	STANFORD UNIVERSITY	Carr, L W	ARC	Reynolds, W G	NCC 2-21	1446
41	STANFORD UNIVERSITY	Snyder, C T	ARC	Karamcheti, K	NCC 2-55	1454
41	STANFORD UNIVERSITY	Marvin, J G	ARC	Karamcheti, K	NCC 2-59	1455
41	STANFORD UNIVERSITY	Olson, L E	ARC	Karamcheti, K	NCC 2-62	1456
41	STANFORD UNIVERSITY	Koenig, D G	ARC	Karamcheti, K	NCC 2-74	1457
41	STANFORD UNIVERSITY	Atencio, A	ARC	Karamcheti, K	NCC 2-75	1458
41	STANFORD UNIVERSITY	Soderman, P T	ARC	Karamcheti, K	NCC 2-76	1459
41	STANFORD UNIVERSITY	Lee, G	ARC	Karamcheti, K	NCC 2-77	1460
41	STANFORD UNIVERSITY	McKenzie, R L	ARC	Bershafer, D	NCC 2-82	1461
41	STANFORD UNIVERSITY	Presley, L L	ARC	Karamcheti, K	NCC 2-89	1462
41	STANFORD UNIVERSITY	Morse, H A	ARC	Steger, T	NCC 2-97	1463
41	STANFORD UNIVERSITY	Franklin, J A	ARC	Bryson, A E	NCC 2-106	1465
41	STANFORD UNIVERSITY	Presley, L L	ARC	Karamcheti, K	NCC 2-149	1473

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41	STANFORD UNIVERSITY	Lampkin, B A	ARC	Karamcheti, K	NCC 2-150	1474
41	STANFORD UNIVERSITY	Ciffone, D L	ARC	Ashley, H	NSG 2359	1495
41	STANFORD UNIVERSITY	Franklin, J A	ARC	Debra, D B	NSG 2400	1496
41	STANFORD UNIVERSITY	Gilyard, G B	DFRC	Debra, D B	NSG 4002	1497
41	STANFORD UNIVERSITY	Edwards, J W	LARC	Debra, D B	NAG 1-105	1386
41	STANFORD UNIVERSITY	Jernell, L S	LARC	Shevell, R S	NAG 1-202	1388
41	STANFORD UNIVERSITY	Doggett, R V, Jr	LARC	Ashley, H	NGL 05-020-243	1479
41	STANFORD UNIVERSITY	Carter, C H	HQ-LC	Steger, J L	NGT 05-020-802	1491
41	STANFORD UNIVERSITY	Graves, R A	HQ-RT	Chapman, D R	NGT 05-020-801	1490
41	ST U NY COL-ONEONTA	Harvey, W. D	LARC	Ram, R B	NAG 1-131	3506
41	SYRACUSE UNIVERSITY	Seiner, J M	LARC	Dosanjh, D	NAG 1-129	3509
41	SYRACUSE UNIVERSITY	Stone, J R	MSFC	Dosanjh, D S	NAG 3-202	3510
41	TEXAS A&M UNIV SYSTM	Enomoto, F Y	ARC	Miley, S J	NAG 2-25	4083
41	TEXAS A&M UNIVERSITY	Gambucci, B J	ARC	Brusse, J C	NAS 2-10272	4094
41	TEXAS A&M UNIVERSITY	Shockey, G A	ARC	Hall, G F	NCA 2-773101	4118
41	TEXAS A&M UNIVERSITY	Corsiglia, V R	ARC	Chevalier, H	NCC 2-78	4119
41	TEXAS A&M UNIVERSITY	Andre, W. L	ARC	Phillips, D T	NSG 2226	4129
41	TEXAS A&M UNIVERSITY	Oakes, A G	GSFC	El-sayed, S Z	NAS 5-22966	4095
41	TEXAS A&M UNIVERSITY	Willshire, W L, Jr	LARC	Gerhold, C H	NAG 1-11	4084
41	TEXAS A&M UNIVERSITY	Dow, M B	LARC	Horn, W J	NAG 1-184	4086
41	TEXAS A&M UNIVERSITY	Jernell, L S	LARC	Miley, S J	NAG 1-214	4087
41	TEXAS A&M UNIVERSITY	Everhart, J L	LARC	Carlson, L A	NSG 1174	4127
41	TEXAS A&M UNIVERSITY	Needleman, H C	WFC	Carlson, L A	NAS 6-3072	4098
41	TUSKEGEE INSTITUTE	Knox, C E	LARC	Hargrove, A	NAG 1-72	1020
41	TUSKEGEE INSTITUTE	Civinskas, K C	LERC	Jenkins, R M	NSG 3295	1028
41	UNIV OF AKRON	Chamis, C C	LERC	Simon, A L	NAG 3-50	3697
41	UNIV OF AKRON	Chamis, C C	LERC	Adams, M L	NSG 3283	3705
41	UNIV OF ARIZONA	Harris, J E	LARC	Kinney, R B	NAG 1-141	1123
41	UNIV OF ARIZONA	Chamis, C C.	LERC	Gallagher, R H	NAG 3-45	1130
41	UNIV OF ARIZONA	Graves, R A	HQ-RT	Fung, K Y	NGT 03-002-800	1195
41	UNIV OF ARIZONA	Brinton, H C	HQ-SL	Tomasko, M	NAGW 55	1146
41	UNIV ARKANSAS-FAYETV	Ragent, B	ARC	Mazumder, M K	NGL 04-001-007	1229
41	UNIV CALIF-BERKELEY	Forrest, R D.	ARC	Kanafani, A	NAG 2-19	1509
41	UNIV CALIF-BERKELEY	Lee, G	ARC	Holt, M	NGR 05-003-451	1584
41	UNIV CALIF-BERKELEY	Marek, C J	LERC	Oppenheim, A K	NAG 3-131	1513
41	UNIV CALIF-BERKELEY	Marek, C J	LERC	Oppenheim, A K	NSG 3227	1594
41	UNIV CALIF-L ANGELES	Miura, H	ARC	Friedmann, P P	NAG 2-116	1627
41	UNIV CALIF-L ANGELES	Soderman, P	ARC	Meecham, W C	NSG 2290	1671
41	UNIV CALIF-L ANGELES	Iliff, K W	DFRC	Balakrishnan, A V	NSG 4015	1674
41	UNIV CALIF-L ANGELES	Young, W H	LARC	Friedmann, P	NSG 1578	1670
41	UNIV CALIF-L ANGELES	Friedman, R	LERC	Liu, C Y	NSG 3116	1672
41	UNIV CALIF-SAN DIEGO	Marek, C J	LERC	Libby, P A	NSG 3219	1744
41	UNIV OF CINCINNATI	Hodges, D H	ARC	Crespo Da Silva, M R	NAG 2-38	3708
41	UNIV OF CINCINNATI	Rakich, J V	ARC	Davis, R T	NCA 2-130101	3715
41	UNIV OF CINCINNATI	Erzberger, H	ARC	Slater, G L	NCA 2-130801	3716
41	UNIV OF CINCINNATI	Rakich, J V	ARC	Davis, R T	NCA 2-130901	3717
41	UNIV OF CINCINNATI	Swanson, R. C	LARC	Rubin, S S	NAG 1-8	3706
41	UNIV OF CINCINNATI	McLallin, K L	LERC	Tabakoff, W	NAG 3-26	3709
41	UNIV OF CINCINNATI	Katsanis, T	LERC	Hamed, A A	NAG 3-52	3710
41	UNIV OF CINCINNATI	Katsanis, T	LERC	Ghia, K N	NAG 3-194	3713
41	UNIV OF CINCINNATI	Kao, H C	LERC	Ghia, K N	NSG 3267	3727
41	UNIV OF CINCINNATI	Johnston, G D	MSFC	Brown, D L	NAS 8-34503	3714
41	UNIV OF CINCINNATI	Graves, R A	HQ-RT	Murman, E M	NGT 36-004-800	3718
41	UNIV COLORADO-BOLDR	Stainback, P C	LARC	Uberoi, M S	NAG 1-59	1909
41	UNIV OF CONNECTICUT	Warmbrodt, W	ARC	Bar-shalom, Y	NAG 2-72	1995
41	UNIV OF CONNECTICUT	Olsen, W A	LERC	Bowley, W W	NAG 3-64	1996
41	UNIV OF DAYTON	Shaw, R J	LERC	Luers, J K	NAG 3-65	3730
41	UNIV OF DAYTON	Carr, R E	WFC	Luers, J K	NSG 6026	3736



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41	UNIV OF DELAWARE	Farrell, C A	LERC	Seidel, B S	NAG 3-121	2018
41	UNIV OF FLORIDA	Malcolm, G N	ARC	Clarkson, M	NCC 2-23	2145
41	UNIV OF FLORIDA	Koenig, D G	ARC	Fearn, R L	NCC 2-133	2146
41	UNIV OF FLORIDA	Aoyagi, K	ARC	Fearn, R L	NSG 2288	2155
41	UNIV OF FLORIDA	Wilkinson, S P	LARC	Clarkson, M	NAG 1-104	2125
41	UNIV OF FLORIDA	Carter, C H	HQ-LC	Clarkson, M	NGT 10-005-800	2150
41	UNIV OF FLORIDA	Carter, C H	HQ-LC	Fearn, R L	NGT 10-005-801	2151
41	UNIV OF FLORIDA	Carter, C H	HQ-LC	Fearn, R L	NGT 10-005-803	2153
41	UNIV HOUSTON-HOUSTON	Maestrello, L	LARC	Nadkarni, A A	NSG 1475	4155
41	UNIV HOUSTON-HOUSTON	Stone, J R	MSFC	Hussain, A K	NAG 3-198	4140
41	UNIV ILLINOIS-URBANA	Somers, D M	LARC	Ormsbee, A I	NAG 1-76	2343
41	UNIV ILLINOIS-URBANA	Hankins, W W	LARC	Chien, R T	NAG 1-90	2344
41	UNIV ILLINOIS-URBANA	Baker, C E	LERC	Strehlow, R A	NAG 3-60	2347
41	UNIV OF IOWA	Marvin, J G	ARC	Ramaprian, B R	NAG 2-110	2462
41	UNIV OF IOWA	Bullock, G	GSFC	Frank, L A	NAS 5-25689	2474
41	UNIV OF IOWA	Bullock, G	GSFC	Shawhan, S	NAS 5-25690	2475
41	UNIV OF IOWA	Giles, G L	LARC	Haug, E J	NAG 1-215	2461
41	UNIV OF IOWA	Johnson, G M	LERC	Chen, C J	NSG 3305	2485
41	UNIV OF KANSAS	Stroub, R H	ARC	Zerwekh, R	NCC 2-92	2521
41	UNIV OF KANSAS	Cozzolongo, J V	ARC	Schweikhard, W G	NCC 2-107	2522
41	UNIV OF KANSAS	Harper, M	ARC	Schweikhard, W G	NCC 2-110	2523
41	UNIV OF KANSAS	Stroub, R H	ARC	Roskam, J	NCC 2-112	2524
41	UNIV OF KANSAS	Black, J M	DFRC	Roskam, J	NAG 4-5	2503
41	UNIV OF KANSAS	Kordes, E E	DFRC	Schweikhard, W G	NCC 4-3	2525
41	UNIV OF KANSAS	Jenkins, J M	DFRC	Lenzen, K H	NSG 4008	2531
41	UNIV OF KANSAS	Kordes, E E	DFRC	Roskam, J	NSG 4019	2532
41	UNIV OF KANSAS	Frink, N T	LARC	Lan, C E	NAG 1-75	2493
41	UNIV OF KANSAS	Gilbert, W P	LARC	Lan, C E	NAG 1-134	2495
41	UNIV OF KANSAS	Jernell, L S	LARC	Roskam, J	NAG 1-205	2497
41	UNIV OF KANSAS	Holmes, B J	LARC	Roskam, J	NAS 1-15770	2510
41	UNIV OF KANSAS	Downing, D R	LARC	Roskam, J	NAS 1-16255	2511
41	UNIV OF KANSAS	Holmes, B J	LARC	Kohlman, D L	NAS 1-16363	2512
41	UNIV OF KANSAS	Stephens, D G	LARC	Roskam, J	NCC 1-6	2518
41	UNIV OF KANSAS	Campbell, J F	LARC	Lan, C E	NCC 1-18	2519
41	UNIV OF KANSAS	Lamar, J E	LARC	Lan, C E	NSG 1629	2528
41	UNIV OF KANSAS	Holmes, B J	LARC	Lenzen, K	NSG 1633	2529
41	UNIV OF KANSAS	Neumann, H E	LERC	Schweikhard, W G	NAG 3-11	2498
41	UNIV OF KANSAS	Shaw, R J	LERC	Kohlman, D L	NAG 3-71	2500
41	UNIV OF MANCHESTER	Malcolm, G N	ARC	Lamont, P J	NCCW 1	4655
41	UNIV MARYLAND-COL PK	Walsh, M J	LARC	Wallace, J M	NAG 1-24	2633
41	UNIV MARYLAND-COL PK	Drummond, J P	LARC	Anderson, J D	NCC 1-41	2689
41	UNIV MARYLAND-COL PK	Dicarlo, D J	LARC	Winkleman, A E	NSG 1570	2715
41	UNIV MICH-ANN ARBOR	Lee, G	ARC	Vest, C M	NAG 2-118	2994
41	UNIV MICH-ANN ARBOR	Bullock, G	GSFC	Hays, P	NAS 5-25691	3031
41	UNIV MICH-ANN ARBOR	Skillman, D	GSFC	Carignan, G	NAS 5-26069	3032
41	UNIV MICH-ANN ARBOR	McCarty, J L	LARC	Clark, S K	NSG 1607	3054
41	UNIV MICH-ANN ARBOR	Abdalla, K L	LERC	Vangunst, R W	NAG 3-168	2996
41	U MINN-MNPLS-ST PAUL	Chapman, G T	ARC	Moran, J P	NAG 2-4	3071
41	UNIV MO-ROLLA	Holst, T L	ARC	Lee, S C	NCA 2-450001	3139
41	UNIV MO-ROLLA	Holmes, B J	LARC	Selberg, B P	NAG 1-26	3134
41	UNIV MO-ROLLA	Lester, H C	LARC	Eversman, W	NAG 1-198	3135
41	UNIV MO-ROLLA	Hefner, J N	LARC	Patterson, G K	NSG 1452	3141
41	UNIV MO-ROLLA	Baumeister, K J	LERC	Eversman, W	NAG 3-178	3136
41	UNIV MO-ROLLA	Baumeister, K J	LERC	Eversman, W	NSG 3231	3142
41	UNIV NEVADA-L VEGAS	Bland, S R	LARC	Fromme, J A	NAG 1-84	3183
41	UNIV OF NEVADA-RENO	Anderson, D J	ARC	Chisholm, J P	NCC 2-134	3184
41	UNIV OF NEVADA-RENO	Presley, L L	ARC	Rose, W C	NSG 2291	3185
41	UNIV OF NEW MEXICO	Hwang, D P	LERC	Chou, D C	NAG 3-207	3286

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41	UNIV OF NOTRE DAME	Somers, D M	LARC	Mueller, T J	NSG 1419	2435
41	UNIV OF SANTA CLARA	Lomax, H	ARC	Vinokur, M	NCC 2-16	1836
41	UNIV OF SANTA CLARA	Rubesin, M W	ARC	Higuchi, H	NCC 2-98	1839
41	UNIV OF SOUTHAMPTON	Ladson, C L	LARC	Goodyer, M J	NSG 7172	4658
41	UNIV OF SOUTHAMPTON	Boydin, R P	LARC	Goodyer, M J	NSG 7523	4659
41	UNIV OF SOUTHERN CAL	Hefner, J N	LARC	Blackwelder, R F	NAG 1-19	1845
41	UNIV OF SOUTHERN CAL	Stein, M	LARC	Seide, P	NSG 1401	1868
41	UNIV TENNESSEE-KNOXV	Steinle, F W, Jr.	ARC	Wu, J M	NAG 2-71	3993
41	UNIV TENNESSEE-KNOXV	Steinle, F W, Jr	ARC	Tirres, C	NCA 2-772901	4013
41	UNIV TENNESSEE-KNOXV	Bland, S R	LARC	Kimble, K R	NSG 1224	4020
41	UNIV TENNESSEE-KNOXV	Siegel, R	LARC	Kurosaka, M	NSG 3287	4021
41	UNIV TENNESSEE-KNOXV	Baumeister, K J	LERC	White, J W	NAG 3-18	3994
41	UNIV TENNESSEE-KNOXV	Shaw, R J	LERC	Keshock, E G	NAG 3-83	3995
41	UNIV TENNESSEE-KNOXV	Rostafinski, W	LERC	Caruthers, J E	NAG 3-86	3996
41	UNIV TENNESSEE-KNOXV	Shaw, R J	LERC	Keshock, E G	NAG 3-90	3997
41	UNIV TENNESSEE-KNOXV	Mercier, D R	MSFC	Smith, V K, III	NAS 8-33225	4005
41	UNIV TEXAS-AUSTIN	Lasinski, T A	ARC	Carey, G F	NAG 2-5	4170
41	UNIV TEXAS-AUSTIN	Goodrich, W D	JSC	Bertin, J J	NAS 9-13680	4186
41	UNIV TEXAS-DALLAS	Skillman, D	GSFC	Heelis, R A	NAS 5-26068	4228
41	UNIV TEXAS-DALLAS	Hoffman, R A	GSFC	Winningham, J D	NAS 5-26070	4229
41	UNIV TEXAS-DALLAS	Skillman, D	GSFC	Hanson, W B	NAS 5-26071	4230
41	UNIV TEXAS-EL PASO	Albers, J A	DFRC	Riter, S	NCC 4-4	4249
41	UNIV OF TOLEDO	Shaw, R J	LERC	Dewitt, K J	NAG 3-72	3739
41	UNIV OF TOLEDO	Brown, G V	LERC	Kaza, K R	NSG 3139	3749
41	UNIV OF VIRGINIA	Taylor, R T	LARC	Kugitman, A R	NAS 1-16286	4407
41	UNIV OF WASHINGTON	Chapman, G T	ARC	Childs, M E	NGL 48-002-047	4550
41	UNIV OF WASHINGTON	Lee, G	ARC	Childs, M E	NGR 48-002-141	4551
41	UNIV OF WASHINGTON	Braun, W H	LERC	Dickson, L J	NSG 3261	4554
41	UNIV OF WATERLOO	Chapman, G T	ARC	Hui, W H	NAGW 130	4651
41	VILLANOVA UNIVERSITY	Crabill, N L	LARC	Goldberg, J H	NAS 1-16095	3946
41	VIRGINIA POLY INST	Marvin, J G	ARC	Pierce, F J	NSG 2301	4497
41	VIRGINIA POLY INST	Zoby, E V	LARC	Lewis, C H	NAG 1-53	4436
41	VIRGINIA POLY INST	Newsom, J R	LARC	Anderson, L R	NAG 1-80	4439
41	VIRGINIA POLY INST	Melfi, L T	LARC	Lewis, C H	NAG 1-101	4441
41	VIRGINIA POLY INST	Hefner, J N	LARC	Schetz, J A	NAG 1-119	4443
41	VIRGINIA POLY INST	Sobieski, J E	LARC	Hallauer, W L	NAG 1-145	4449
41	VIRGINIA POLY INST	Bushnell, D M	LARC	Telionis, D P	NAG 1-146	4450
41	VIRGINIA POLY INST	Starnes, J H	LARC	Haftka, R T	NAG 1-168	4452
41	VIRGINIA POLY INST	Starnes, J H	LARC	Duke, J C	NAG 1-193	4456
41	VIRGINIA POLY INST	Starnes, J H	LARC	Johnson, E R	NAG 1-201	4457
41	VIRGINIA POLY INST	Price, D B	LARC	Kelley, H J	NAG 1-203	4458
41	VIRGINIA POLY INST	Erickson, W D	LARC	Hobeika, A G	NCC 1-20	4480
41	VIRGINIA POLY INST	Harris, J E	LARC	Nayfeh, A H	NSG 1255	4486
41	VIRGINIA POLY INST	Yates, E C, Jr	LARC	Mook, D T	NSG 1262	4487
41	VIRGINIA POLY INST	Creedon, J F	LARC	Vanlandingham, H F	NSG 1354	4488
41	VIRGINIA POLY INST	Hefner, J N	LARC	Sanc, W S	NSG 1608	4495
41	VIRGINIA POLY INST	Krejsa, E A	LERC	Mahan, J R	NAG 3-124	4463
41	VIRGINIA POLY INST	Chamis, C C	LERC	Reddy, J N	NAG 3-208	4465
41	VIRGINIA POLY INST	Johns, A L	LERC	Jakubowski, A K	NSG 3073	4498
41	VIRGINIA POLY INST	Flemings, D P	LERC	Mitchell, L D	NSG 3239	4500
41	VIRGINIA POLY INST	Lehtinen, B	LERC	Leonard, R G	NSG 3275	4502
41	VIRGINIA POLY INST	Carter, C H	HQ-LC	Marchman, J F	NGT 47-004-800	4483
41	VIRGINIA POLY INST	Carter, C H	HQ-LC	Telionis, D P	NGT 47-004-801	4484
41	WAYNE STATE UNIV	Maestrello, L	LARC	Chow, P L	NAG 1-113	3064
41	WESTERN MICHIGAN U	Schmidt, H W	LERC	Behm, H D	NAG 3-92	3066
41	WICHITA STATE UNIV	Holmes, B J	LARC	Wentz, W H	NAG 1-114	2536
41	WICHITA STATE UNIV	Weidner, J P	LARC	Zumwalt, G W	NCC 1-31	2537
41	WICHITA STATE UNIV	Rogers, R C	LARC	Zumwalt, G W	NSG 1575	2538

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41	WICHITA STATE UNIV	Miller, D R	LERC	Wentz, W H , Jr	NSG 3277	2540
41	YOUNGSTOWN STATE U	Creedon, J F	LARC	Foulkes, R H	NAG 1-88	3760
42	AUBURN UNIV-AUBURN	Shackelford, B J	MSFC	Foster, W A	NAS 8-33886	1014
42	BROWN UNIVERSITY	Boyce, J M	HQ-SL	Head, J W	NAGW 137	3950
42	CITY COLLEGE OF N Y	Montgomery, R C	LARC	Thau, F E	NAG 1-6	3297
42	COLLEGE OF WM & MARY	Price, D B	LARC	Rublein, G T	NAG 1-209	4312
42	COLORADO STATE UNIV	Kerslake, W R	LERC	Kaufman, H R	NSG 3011	1898
42	HOWARD UNIVERSITY	Walz, J	LARC	Jones, I W	NSG 1320	2087
42	MASS INST OF TECH	Kerslake, W R	LERC	Kolm, H H	NSG 3175	2927
42	MASS INST OF TECH	Greenfield, M A	HQ-RT	Mar, J W	NAGW 21	2858
42	OLD DOMINION UNIV	Cooper, P A	LARC	Prabhakaran, R	NCC 1-26	4367
42	PRINCETON UNIVERSITY	Banks, B	LERC	O'Neill, G K	NSG 3176	3242
42	SOUTHERN METHODIST U	Marvin, J G	ARC	Simpson, R L	NSG 2354	4082
42	STANFORD UNIVERSITY	Howe, J T	ARC	Bershafer, D	NCC 2-10	1443
42	STANFORD UNIVERSITY	Lorell, K R	ARC	Powell, J D	NCC 2-29	1447
42	STANFORD UNIVERSITY	Kant, S	GSFC	Debra, D B	NAS 5-21960	1415
42	STANFORD UNIVERSITY	Horner, G C	LARC	Cannon, R H	NAG 1-97	1385
42	STANFORD UNIVERSITY	Diesposti, R S	LERC	Breakwell, J V	NAG 3-63	1401
42	STATE UNIV NY-ALBANY	Whiting, E E	HQ-RT	Ratcliff, K F	NSG 7501	3465
42	UNIV ALA-UNIVERSITY	Ballance, J O	MSFC	Greene, M	NAS 8-34529	1079
42	UNIV OF ARIZONA	Hansen, Q M	ARC	Parks, R E	NAS 2-10903	1163
42	UNIV OF DAYTON	Gentile, L C	LERC	Engler, N A	NAS 3-21370	3731
42	UNIV OF LOUISVILLE	Winder, S W	MSFC	Childs, D W	NAS 8-31233	2558
42	UNIV OF PITTSBURGH	Kerslake, W R	LERC	McWilliams, P A	NAS 3-22662	3928
42	UNIV STHN COLORADO	Hruby, R J	ARC	Carestia, R A	NCC 2-41	1991
42	UNIV TENNESSEE-KNOXV	McMillion, J M	MSFC	Hung, J C	NAS 8-34426	4012
42	UNIV TEXAS-AUSTIN	Hughes, W E	GSFC	Silverberg, E	NASW 3296	4194
42	UNIV TEXAS-AUSTIN	Bond, V	JSC	Nacozy, P E	NAS 9-16308	4190
42	UNIV OF VIRGINIA	Horner, G C	LARC	Pilkey, W D	NAG 1-137	4397
42	VIRGINIA POLY INST	Montgomery, R C	LARC	Johnson, C R	NAG 1-7	4435
43	CASE WESTERN RESERVE	Hsu, L C	LERC	Liu, C C	NAG 3-66	3575
43	CASE WESTERN RESERVE	Riley, T J	LERC	Angus, J C	NAG 3-191	3588
43	CATHOLIC UNIVERSITY	Friedman, R	LERC	Moynihan, C T	NAG 3-94	2026
43	CLEVELAND STATE UNIV	Dutta, S	LERC	Yeh, H C	NSG 3155	3642
43	PENN STATE U-UNIV PK	Loomis, W R	LERC	Klaus, E E	NAG 3-35	3858
43	RENSSELAER POLY-NY	Friedman, R	LERC	Moynihan, C T	NAG 3-213	3433
43	RICE UNIVERSITY	Lin, C H	JSC	Davis, S H	NAS 9-15630	4064
43	STANFORD UNIVERSITY	Poppa, H	ARC	Boudart, M	NCA 2-745105	1436
43	UNIV OF DELAWARE	Alterescu, S	GSFC	Glass, W P	NAS 5-26273	2022
43	UNIV OF FLORIDA	Sherbley, D W	LERC	Walker, R D , Jr	NGR 10-005-182	2149
43	UNIV OF SHEFFIELD	Lyons, V J	LERC	Chigier, N A	NSG 7517	4657
43	YALE UNIVERSITY	Kohl, F J	LERC	Rosner, D E	NAG 3-201	2007
44	NO CAR A&T STATE U	Montgomery, R C	LARC	Abu-saba, E G	NCC 1-37	3529
44	NO CAR A&T STATE U	Rhodes, M D	LARC	Sharma, A V	NSG 1631	3533
44	UNIV OF AKRON	Carter, C H	HQ-LC	Fertis, D G	NGT 36-001-800	3703
44	UNIV OF AKRON	Carter, C H	HQ-LC	Chang, T Y	NGT 36-001-801	3704
44	UNIV CALIF-BERKELEY	Carter, C H	HQ-LC	Auslander, D M	NGT 05-003-801	1592
44	UNIV COLORADO-BOLDR	Brooks, W F	ARC	Sture, S	NAG 2-58	1911
44	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	McCuen, R H	NGT 21-002-800	2703
44	VIRGINIA POLY INST	Whitlock, C H	LARC	Kuo, C Y	NAG 1-123	4444
45	ALABAMA A&M UNIV	Bilbro, J W	MSFC	Murty, S S	NSG 8037	1003
45	AUBURN UNIV-AUBURN	Routh, D E	MSFC	Kerns, D V	NAS 8-33092	1012
45	AUBURN UNIV-AUBURN	Harper, W	MSFC	Shumpert, T	NAS 8-33880	1013
45	AUBURN UNIV-AUBURN	Wagnon, F W	MSFC	Irwin, J D	NCA 8-133	1017
45	BOWIE STATE COLLEGE	Mundy, J R	GSFC	Bonds, J W	NCA 5-96	2586
45	CARNEGIE-MELLON UNIV	Lupton, A O	LARC	Siewiorek, D P	NAG 1-190	3809
45	CARNEGIE-MELLON UNIV	Baumbick, R J	LERC	Casasent, D	NAG 3-5	3810
45	CASE WESTERN RESERVE	Haugland, E H	LERC	Pyee, M M	NAG 3-187	3587

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45	CASE WESTERN RESERVE	Heighway, J E	LERC	Ferendeci, A M	NAG 3-225	3590
45	CASE WESTERN RESERVE	Stevens, G H	LERC	Claspy, P C	NSG 3085	3607
45	CATHOLIC UNIVERSITY	Heaney, J B	GSFC	Lally, J F	NAS 5-26226	2027
45	CITY COLLEGE OF N Y	Schadelbauer, S	JSC	Schilling, D L	NAS 9-16473	3304
45	CITY COLLEGE OF N Y	Salzman, J A	LERC	Schilling, D L	NAG 3-119	3298
45	CLEVELAND STATE UNIV	McBrien, E F	LERC	Klingshirn, E A	NAG 3-108	3630
45	CLEVELAND STATE UNIV	Miller, E F	LERC	Groumpos, P P	NAG 3-156	3634
45	CLEVELAND STATE UNIV	Triner, J E	LERC	Maisel, J E	NAG 3-169	3636
45	CLEVELAND STATE UNIV	Bozek, J M	LERC	Chang, G C	NCC 3-16	3640
45	COLORADO STATE UNIV	Taylor, M B	GSFC	Parkenson, B W	NSG 5352	1904
45	COLUMBIA UNIVERSITY	Leroy, B E	LERC	Meadows, H	NAS 3-22464	3319
45	CORNELL UNIVERSITY	Conway, E J	LARC	Ballantyne, J M	NAG 1-83	3341
45	CORNELL UNIVERSITY	Magee, C J	LARC	Eastman, L F	NAG 1-208	3343
45	CORNELL UNIVERSITY	Magee, C J	LARC	Ballantyne, J M	NSG 1642	3371
45	CORNELL UNIVERSITY	Conway, E J	LARC	Ballantyne, J M	NSG 1651	3372
45	CORNELL UNIVERSITY	Gilbert, L J	LERC	Thomas, R J	NAG 3-104	3347
45	DUKE UNIVERSITY	Kolecki, J. C	LERC	Wilson, T G	NSG 3157	3525
45	GEORGE WASHINGTON U	Meneghini, R	GSFC	Lang, R H	NAG 5-83	2041
45	GEORGE WASHINGTON U	Croswell, W F	LARC	Liebowitz, H	NGR 09-010-096	2055
45	GEORGE WASHINGTON U	Bailey, M C	LARC	Liebowitz, H	NSG 1110	2057
45	GEORGIA INST OF TECH	King, L J	GSFC	Gagliano, J A	NAS 5-26528	2207
45	GEORGIA INST OF TECH	King, J L	GSFC	Forsythe, R E	NSG 5012	2230
45	GEORGIA INST OF TECH	Eggers, D S	JSC	Cooke, W P	NAS 9-16353	2212
45	GEORGIA INST OF TECH	O'Neal, R L	LARC	Blue, M D	NAS 1-14654	2197
45	GEORGIA INST OF TECH	O'Neal, R L	LARC	Gaylord, T K	NAS 1-15370	2198
45	GEORGIA INST OF TECH	Gleason, E H	MSFC	Gagliano, J A	NAS 8-33800	2210
45	GEORGIA INST OF TECH	Gleason, E H	MSFC	Kozakoff, D J	NAS 8-34543	2211
45	HAMPTON INSTITUTE	Jobson, D J	LARC	Trehan, A K	NSG 1294	4338
45	HAMPTON INSTITUTE	Katzberg, S J	LARC	Trehan, A K	NSG 1552	4339
45	HOFSTRA UNIVERSITY	Johnson, J W	LARC	Weissman, W E	NGR 33-209-002	3394
45	HOWARD UNIVERSITY	Alcorn, G E	GSFC	Harris, G L	NAG 5-180	2069
45	HOWARD UNIVERSITY	Santarpia, D E	GSFC	Chowdhary, R	NAS 5-26019	2078
45	HOWARD UNIVERSITY	Santarpia, D E	GSFC	Chowdhary, R	NAS 5-26531	2079
45	HOWARD UNIVERSITY	Taylor, R E	GSFC	Sennott, J W	NSG 5336	2092
45	HOWARD UNIVERSITY	Carter, C H	HQ-LC	Deloatch, E M	NGT 09-011-801	2086
45	JOHNS HOPKINS UNIV	Pitts, F L	LARC	Masson, G M	NSG 1442	2618
45	MASS INST OF TECH	Elliott, J R	LARC	Stein, G	NAG 1-2	2812
45	MASS INST OF TECH	Magee, C J	LARC	Fonstad, C G	NAG 1-48	2814
45	MASS INST OF TECH	Hayes, P J	LARC	Epstein, D J	NAG 1-98	2817
45	MICHIGAN STATE UNIV	Santarpia, D E	GSFC	Siegel, M	NAS 5-26445	2985
45	MISSISSIPPI STATE U	Dehaye, R F	MSFC	Wade, T E	NAS 8-33448	3107
45	MISSISSIPPI STATE U	Edge, T M	MSFC	Causey, W H	NAS 8-33450	3108
45	MISSISSIPPI STATE U	Sieler, B K	MSFC	Ingels, F M	NAS 8-33887	3110
45	NEW MEX ST U-LAS CR	Blum, A	GSFC	Gilcrease, A	NAS 5-26662	3277
45	NO CAR A&T STATE U	Magee, C J	LARC	Stefanakos, E	NSG 1390	3531
45	NO CAROLINA STATE U	Beng, H F	LARC	Snyder, W E	NAG 1-20	3537
45	NO CAROLINA STATE U	Lupton, A O	LARC	Gault, J W	NAG 1-194	3540
45	NO CAROLINA STATE U	Benz, H F	LARC	Snyder, W E	NSG 1353	3552
45	NO CAROLINA STATE U	Batson, V M	LARC	Rajala, S A	NSG 1355	3553
45	NO CAROLINA STATE U	Bailey, M C	LARC	Kauffman, J F	NSG 1588	3557
45	OHIO STATE UNIV	Wolfe, J H	ARC	Kraus, J D	NSG 2162	3682
45	OHIO STATE UNIV	Gilreath, M C	LARC	Burnside, W D	NSG 1498	3678
45	OHIO STATE UNIV	Gilreath, M C	LARC	Peters, L	NSG 1613	3679
45	OHIO STATE UNIV	Miller, E F	LERC	Levis, C A	NAG 3-159	3662
45	OHIO STATE UNIV	Baumbilk, R J	LERC	Collins, S A, Jr	NSG 3302	3690
45	OHIO STATE UNIV	Ippolito, L J	HQ-EC	Hodge, D B	NASW 3393	3672
45	OHIO UNIVERSITY	Downing, D R	LARC	McFarland, R H	NGR 36-009-017	3696
45	OLD DOMINION UNIV	Bailey, M C	LARC	Moskowitz, S M	NAG 1-63	4347

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
45	OLD DOMINION UNIV	Hellbaum, R F	LARC	Goghia, G L	NSG 1177	4377
45	OLD DOMINION UNIV	Gilreath, M C	LARC	Mielke, R R	NSG 1655	4392
45	PURDUE UNIVERSITY	Strong, J P	GSFC	Reeves, A P	NAG 5-3	2404
45	PURDUE UNIVERSITY	Yates, I C	MSFC	Taylor, R E	NAS 8-34303	2413
45	QUEENSBOROUGH COMM C	Webster, L	LERC	Zanger, H	NCC 2-108	3423
45	RENSSELAER POLY-NY	Armstrong, E S	LARC	Balas, M J	NAG 1-171	3425
45	RENSSELAER POLY-NY	Brinker, D	LERC	Ghandi, S K	NAG 3-188	3429
45	SAN JOSE STATE UNIV	Deboo, G J	ARC	Strasilla, U	NAG 2-85	1347
45	SAN JOSE STATE UNIV	Deboo, G J	ARC	Yuen, C	NCC 2-143	1380
45	SO ILL UNIV-CARBONDL	Bankaitis, H V	LERC	Dodd, C W	NCC 3-7	2301
45	STANFORD UNIVERSITY	Leonard, A	ARC	Buneman, O	NCA 2-745906	1440
45	STANFORD UNIVERSITY	Browell, E V	LARC	Byer, R L	NAG 1-182	1387
45	STANFORD UNIVERSITY	Whyte, W A	LERC	Lusignan, B B	NAG 3-151	1402
45	SYRACUSE UNIVERSITY	Benz, H F	LARC	Kowel, S T	NSG 1602	3511
45	SYRACUSE UNIVERSITY	Segura, R	LARC	Kowel, S T	NSG 1611	3512
45	TEXAS A&M UNIVERSITY	Arndt, G D	JSC	Marouf, A	NAS 9-16088	4110
45	TEXAS A&M UNIVERSITY	Hearn, C P	LARC	Painter, J H	NSG 1639	4128
45	TEXAS A&M UNIVERSITY	Nowakowski, M F	MSFC	Parker, P L	NAS 8-33519	4100
45	TEXAS TECH UNIV	Day, J L	JSC	Portnoy, W M	NAS 9-11162	4136
45	TEXAS TECH UNIV	Zaepfel, K P	LARC	Trost, T F	NAG 1-28	4135
45	TUSKEGEE INSTITUTE	Peacock, C L	MSFC	Doreswamy, C V	NAG 8-5	1023
45	TUSKEGEE INSTITUTE	Young, L E	MSFC	Doreswamy, C V	NSG 8038	1029
45	UNIV CALIF-BERKELEY	Clark, T A	GSFC	Welch, W J	NAG 5-95	1520
45	UNIV OF CINCINNATI	Stermer, R L	LARC	Morarity, J A	NAG 1-204	3707
45	UNIV OF CINCINNATI	Sundberg, G R	LERC	Henderson, H T	NSG 3022	3721
45	UNIV OF CINCINNATI	Renz, D	LERC	Nevin, J H	NSG 3024	3722
45	UNIV OF FLORIDA	Walker, G H	LARC	Li, S S	NSG 1425	2154
45	UNIV OF FLORIDA	Godlewski, M P	LERC	Lindholm, F A	NSG 3018	2156
45	UNIV HOUSTON-HOUSTON	Horner, G C	LARC	Denman, E D	NSG 1603	4156
45	UNIV OF IDAHO	Miller, W H	GSFC	Maki, G K	NAS 5-26534	2276
45	UNIV ILLINOIS-URBANA	Keating, T, Jr	GSFC	Mittra, R	NAS 5-25062	2359
45	UNIV ILLINOIS-URBANA	Abshire, J B	GSFC	Gardner, C S	NSG 5049	2369
45	UNIV ILLINOIS-URBANA	Smetana, J	LERC	Mittra, R	NAG 3-149	2348
45	UNIV ILLINOIS-URBANA	Dewitt, R L	LERC	Strehlow, R A	NAS 3-22666	2358
45	UNIV ILLINOIS-URBANA	Mayr, H G	HQ-SC	Liu, C H	NAGW 207	2357
45	UNIV OF KANSAS	Abbott, L W	DFRC	Kelley, G L	NSG 4026	2534
45	UNIV OF KANSAS	Smetana, J	LERC	Biggs, A W	NAG 3-150	2502
45	UNIV MARYLAND-COL PK	Peake, H J	GSFC	Taylor, L S	NAS 5-25437	2664
45	UNIV MARYLAND-COL PK	Schneoh, P B	GSFC	Yeh, R T	NAS 5-26618	2674
45	UNIV MARYLAND-COL PK	Benz, H F	LARC	Lin, H C	NSG 1468	2714
45	UNIV OF MASS-AMHERST	Johnson, J M	LARC	McIntosh, R E	NAG 1-54	2952
45	UNIV OF MASS-AMHERST	Bailey, M C	LARC	Pozar, D M	NAG 1-163	2954
45	UNIV MICH-ANN ARBOR	Migneault, G E	LARC	Meyer, J F	NSG 1306	3053
45	UNIV MO-COLUMBIA	Eggleston, T W	JSC	Tranter, W H	NAS 9-15477	3129
45	UNIV NEBRASKA-LINCLN	Riley, T J	LERC	Woollam, J A	NAG 3-95	3169
45	UNIV NEBRASKA-LINCLN	Haugland, E J	LERC	Woollam, J A	NAS 3-22465	3172
45	UNIV OF NEW MEXICO	Hayes, P J	LARC	Grannemann, W W	NAG 1-95	3285
45	UNIV OF NOTRE DAME	Seldner, K	LERC	Sain, M K	NSG 3048	2436
45	UNIV OF OXFORD	Hinton, D	LARC	Unavailable	NASW 3301	4656
45	UNIV OF PENNSYLVANIA	Levine, D M	GSFC	Kritikos, H N	NAG 5-92	3918
45	UNIV OF PITTSBURGH	McBrien, E F	LERC	Hamilton, H B	NSG 3163	3939
45	UNIV OF SOUTHERN CAL	Maslowski, E A	LERC	Cambell, P E	NSG 3243	1870
45	UNIV TENNESSEE-KNOXV	Howell, J T, Jr	MSFC	Hung, J C	NAS 8-33604	4008
45	UNIV TEXAS-AUSTIN	Ippolito, L J	HQ-EC	Vogel, W	NASW 3388	4195
45	UNIV OF TOLEDO	Wythe, W	LERC	Kwatra, S C	NAG 3-42	3738
45	UNIV OF TOLEDO	Miller, E F	LERC	Kwatra, S C	NAG 3-157	3741
45	UNIV OF TOLEDO	Gruber, R P	LERC	Stuart, T A	NSG 3281	3752
45	UNIV OF TORONTO	Staskus, J V	LERC	Balmain, K G	NSG 7647	4650

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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
45	UNIV OF VIRGINIA	Kahle, D R	GSFC	Wilson, S G	NAS 5-25634	4411
45	UNIV OF VIRGINIA	Kahle, D R	GSFC	Wilson, S G	NAS 5-26011	4412
45	UNIV OF VIRGINIA	Jones, R L	GSFC	Mattauch, R J	NAS 5-26466	4414
45	UNIV OF VIRGINIA	Loendorf, D D	LARC	Aylor, J H	NAG 1-43	4395
45	UNIV OF VIRGINIA	Segura, R	LARC	Batchman, T E	NAG 1-177	4398
45	UNIV OF VIRGINIA	Ashworth, B R	LARC	Parrish, E A	NSG 1599	4422
45	UNIV OF VIRGINIA	Miller, E F	LERC	Wilson, S G	NAG 3-141	4399
45	UNIV OF WASHINGTON	Alger, D A	LERC	White, M	DEN 3-212	4510
45	UNIV WISC-MADISON	Renz, D D	LERC	Boom, R W	NAG 3-170	4585
45	VIRGINIA POLY INST	Hirschmann, E	GSFC	Bostian, C W	NAS 5-22577	4471
45	VIRGINIA POLY INST	Pitts, F L	LARC	Tront, J G	NAG 1-132	4447
45	VIRGINIA POLY INST	Montgomery, R C	LARC	Vanlandingham, H F	NSG 1527	4492
45	VIRGINIA POLY INST	Maslowski, E A	LERC	Demerdash, N A	DEN 3-65	4434
45	VIRGINIA POLY INST	Kolecki, J C	LERC	Lee, F C	NAG 3-81	4461
45	VIRGINIA POLY INST	Maslowski, E A	LERC	Lee, F C	NAG 3-99	4462
45	VIRGINIA POLY INST	Kolecki, J C	LERC	Lee, F C	NSG 3274	4501
45	YALE UNIVERSITY	Schaefer, D	GSFC	Barker, R C	NGL 07-004-005	2013
46	ALABAMA A&M UNIV	Humphries, W R	MSFC	Saha, H	NSG 8041	1004
46	ARIZONA STATE UNIV	Fleming, D P	LERC	Nelson, H D	NAG 3-6	1094
46	ARIZONA STATE UNIV	Warer, C J	LERC	Mongia, H C	NAG 3-167	1098
46	AUBURN UNIV-AUBURN	Decker, A J	LERC	Swinson, W F	NAG 3-103	1011
46	AUBURN UNIV-AUBURN	Shackleford, B W	MSFC	Sforzini, R H	NCA 8-132	1016
46	CALIF INST OF TECH	Gross, L A	MSFC	Acosta, A J	NAS 8-29313	1265
46	CALIF INST OF TECH	Gross, L A	MSFC	Acosta, A J	NAS 8-33108	1266
46	CAL STATE U-LG BEACH	Johnson, D A	ARC	Modarress, D	NCA 2-382001	1323
46	CAL STATE U-LG BEACH	Townsend, D P	LERC	Akin, L	NAG 3-20	1322
46	CAL STATE U-L ANGLES	McFadden, J J	LERC	Gold, P I	NAG 3-73	1324
46	CAL STATE U-L ANGLES	Pohly, J G	HQ-LC	Manvi, R	NASW 3257	1325
46	CARNEGIE-MELLON UNIV	Schock, H J	LERC	Sirignano, W A	NAG 3-21	3811
46	CARNEGIE-MELLON UNIV	Hendricks, R C	LERC	Hughes, W F	NAG 3-166	3812
46	CARNEGIE-MELLON UNIV	Srawley, J E	LERC	Swedlow, J L	NSG 3172	3814
46	CARNEGIE-MELLON UNIV	Cunningham, R E	LERC	Hughes, W F	NSG 3202	3815
46	CARNEGIE-MELLON UNIV	Carter, C H	HQ-LC	Fix, G J	NGT 39-087-800	3813
46	CASE WESTERN RESERVE	Liebert, C H	LERC	Dybbs, A	NAG 3-97	3577
46	CASE WESTERN RESERVE	Labus, T M	LERC	Ostrack, S	NAS 3-21046	3593
46	CASE WESTERN RESERVE	Anderson, D N	LERC	T'ien, J S	NSG 3230	3614
46	CASE WESTERN RESERVE	Brown, W F, Jr	LERC	Mendelson, A	NSG 3251	3617
46	CLEMSON UNIV-CLEMSON	Poe, C C, Jr	LARC	Goree, J G	NSG 1297	3972
46	CLEVELAND STATE UNIV	Choo, Y K	LERC	Gorla, R S	NAG 3-155	3633
46	CLEVELAND STATE UNIV	Coy, J J	LERC	Frater, J J	NAG 3-186	3637
46	CLEVELAND STATE UNIV	Wang, C R	LERC	Heiles, C E	NCC 3-3	3638
46	CLEVELAND STATE UNIV	Savino, J M	LERC	Kasuba, R	NCC 3-6	3639
46	CLEVELAND STATE UNIV	Presler, A F	LERC	Alkasab, K A	NCC 3-17	3641
46	CLEVELAND STATE UNIV	Lorenzo, C F	LERC	Larson, V H	NSG 3257	3643
46	COLLEGE OF WM & MARY	Tanner, J A	LARC	Anderson, C M	NCC 1-40	4315
46	COLORADO STATE UNIV	Smith, G T	LERC	Smith, F W	NAG 3-40	1882
46	COLORADO STATE UNIV	Kerslake, W R	LERC	Wilbur, P J	NGR 06-002-112	1894
46	DREXEL UNIVERSITY	Gatski, T B	LARC	Rosen, G H	NAG 1-110	3817
46	GEORGIA INST OF TECH	Gross, B	LERC	Atluri, S N	NAG 3-38	2191
46	GEORGIA INST OF TECH	Jones, W R	LERC	Winer, W O	NAG 3-77	2193
46	GEORGIA INST OF TECH	Jones, W R	LERC	Winer, W O	NCC 3-14	2217
46	GEORGIA INST OF TECH	Jones, W R	LERC	Winer, W O	NSG 3106	2226
46	HOWARD UNIVERSITY	Cygnarowicz, T A	GSFC	Watkins, C B	NAG 5-25	2065
46	IMPERIAL C SCI & TEC	Povinelli, L A	LERC	Whitelaw, J	NASW 3258	4653
46	IOWA STATE UNIV	Tanner, J A	LARC	Baumgarten, J R	NSG 1605	2456
46	IOWA STATE UNIV	Carter, C H	HQ-LC	Okushi, T H	NGT 16-002-800	2452
46	LEHIGH UNIVERSITY	Lubomski, J F	LERC	Johnson, S H	NAG 3-135	3841
46	MASS INST OF TECH	Chamis, C C	LERC	Pian, T H	NAG 3-33	2835

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46	MASS INST OF TECH	Vontiesenhausen, G F	MSFC	Unavailable	NAS 8-34381	2884
46	NORTHWESTERN UNIV	Baker, C E	LERC	Law, C K	NAG 3-53	2286
46	NORTHWESTERN UNIV	Wedeven, L D	LERC	Cheng, H S	NCC 3-13	2297
46	NORTHWESTERN UNIV	Coy, J J	LERC	Cheng, H S	NSG 3143	2299
46	OHIO STATE UNIV	Brown, G V	LERC	Leissa, A W	NAG 3-36	3659
46	OLD DOMINION UNIV	Pappa, R S	LARC	Ibrahim, S R	NSG 1649	4390
46	OREGON STATE UNIV	Spera, D A	LERC	Thresher, R W	NAG 3-87	3788
46	PENN STATE U-UNIV PK	Skorobatchkyi, M	LERC	Lestz, S S	NAG 3-91	3860
46	PENN STATE U-UNIV PK	Tacina, R R	LERC	Faeth, G M	NAG 3-190	3862
46	PENN STATE U-UNIV PK	Loomis, W R	LERC	Klaus, E E	NCC 3-9	3888
46	PENN STATE U-UNIV PK	Marer, C J	LERC	Faeth, G M	NSG 3306	3909
46	PENN STATE U-UNIV PK	Pitsenberger, F D	MSFC	Billet, M L	NAS 8-34535	3883
46	PRINCETON UNIVERSITY	McAleese, J D	LERC	Dowell, E	NAG 3-221	3217
46	PRINCETON UNIVERSITY	Cassidy, J F	LERC	Sirignano, W A	NSG 3178	3243
46	PURDUE UNIVERSITY	Haggard, J B	LERC	Shifstad, J G	NSG 3258	2428
46	RENSSELAER POLY-NY	Kiraly, L J	LERC	Loewy, R G	NAG 3-37	3427
46	RENSSELAER POLY-NY	Wedeven, L D	LERC	Ling, F F	NCC 3-12	3440
46	SAN JOSE STATE UNIV	Stroub, R H	ARC	Liniecki, A G	NCA 2-675101	1356
46	STANFORD UNIVERSITY	Lomax, H	ARC	Hughes, T R	NCA 2-745104	1435
46	STANFORD UNIVERSITY	Leonard, A	ARC	Reynolds, W C	NCA 2-745106	1437
46	STANFORD UNIVERSITY	Gaugler, R E	LERC	Johnston, J P	NAG 3-3	1400
46	STATE U NY-STONY BRK	Carter, C H	HQ-LC	Berlad, A L	NGT 33-015-801	3496
46	STEVENS INST OF TECH	Kiraly, L J	LERC	Sisto, F	NAG 3-47	3265
46	TENNESSEE TECH U	Kaufman, J W	MSFC	Swim, W B	NAG 8-7	3991
46	TEXAS A&M UNIVERSITY	Bailey, M M	LERC	Lalk, T R	NAG 3-142	4090
46	TEXAS A&M UNIVERSITY	Hendricks, R C	LERC	Childs, D W	NAG 3-181	4091
46	TEXAS A&M UNIVERSITY	Garcia, F F	MSFC	Childs, D W	NAS 8-33716	4101
46	TEXAS A&M UNIVERSITY	Garcia, F F	MSFC	Morrison, G L	NAS 8-34536	4105
46	TUSKEGEE INSTITUTE	Peoples, J A	MSFC	Sellers, J P, Jr	NSG 8054	1030
46	UNIV OF AKRON	Chamis, C C	LERC	Padovan, J	NAG 3-54	3698
46	UNIV OF AKRON	Coy, J J	LERC	Savage, M	NAG 3-55	3699
46	UNIV ALA-HUNTSVILLE	Decher, R	MSFC	Hendricks, J B	NAS 8-29316	1035
46	UNIV ALA-HUNTSVILLE	Urban, E W	MSFC	Karr, G R	NGT 01-002-083	1072
46	UNIV CALIF-BERKELEY	MacElroy, R D	ARC	Auslander, D M	NCC 2-67	1569
46	UNIV CALIF-BERKELEY	Schock, H J	LERC	Oppenheim, A K	NAG 3-137	1514
46	UNIV CALIF-DAVIS	Pollack, J B	ARC	White, B R	NCA 2-180903	1607
46	UNIV CALIF-IRVINE	Jacina, R R	LERC	Elghobashi, S	NAG 3-176	1616
46	UNIV CALIF-L ANGELES	Vorreiter, J W	ARC	Frederking, T H	NCC 2-64	1654
46	UNIV CALIF-SAN DIEGO	Altman, R L	ARC	Middleman, S	NCA 2-658001	1730
46	UNIV OF CINCINNATI	Monterith, J H	LARC	Brown, D L	NSG 1486	3720
46	UNIV OF CINCINNATI	Coy, J J	LERC	Flanagan, P M	NAG 3-193	3712
46	UNIV OF CINCINNATI	Coy, J J	LERC	Huston, R L	NSG 3188	3724
46	UNIV OF CINCINNATI	Stubbs, R M	LERC	Tabakoff, W	NSG 3218	3725
46	UNIV OF CONNECTICUT	Goldman, L J	LERC	Langston, L S	NSG 3238	1999
46	UNIV OF DELAWARE	Deaton, J W	LARC	Pipes, R B	NSG 1304	2024
46	UNIV OF FLORIDA	Carter, C H	HQ-LC	Tesar, D	NGT 10-005-802	2152
46	UNIV ILLINOIS-CHICGO	Coy, J J	LERC	Litvin, F L	NAG 3-48	2340
46	UNIV ILLINOIS-CHICGO	Coy, J J	LERC	Litvin, F L	NAG 3-136	2341
46	UNIV ILLINOIS-URBANA	Fusaro, R L	LERC	Cusano, C	NAG 3-153	2349
46	UNIV OF KANSAS	Hirschbein, M S	LERC	Dodds, R H	NAG 3-32	2499
46	UNIV OF KANSAS	Straight, D M	LERC	Schweikhard, W G	NAG 3-85	2501
46	UNIV OF KANSAS	Ault, L A	HQ-ET	Barr, B G	NASW 3438	2515
46	UNIV OF KENTUCKY	Cochran, T H	LERC	Altenkirch, R A	NSG 3114	2554
46	UNIV OF LOUISVILLE	Hendricks, R C	LERC	Dressman, J B	NSG 3200	2561
46	UNIV OF MASS-AMHERST	Wedeven, L D	LERC	Wilson, W R	NCC 3-10	2959
46	UNIV OF MIAMI	Bland, R A	KSC	Lee, S S	NAS10-9410	2168
46	UNIV MICH-ANN ARBOR	Marek, C J	LERC	Radhakrishnan, K	NAG 3-147	2995
46	UNIV MICH-ANN ARBOR	Wedeven, L D	LERC	Ludema, K C	NCC 3-11	3045

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46	UNIV OF SANTA CLARA	Skorobatchkyl, M	LERC	Pefley, R K	NAG 3-143	1826
46	UNIV SO CAROLINA-COL	Decker, A J	LARC	Ranson, W F	NAG 3-75	3977
46	UNIV TENNESSEE-KNOXV	Carter, C H	HQ-LC	Keefer, D	NGT 43-001-801	4017
46	UNIV OF TOLEDO	Ludwig, L P	LERC	Keith, T E	NSG 3156	3750
46	UNIV OF VIRGINIA	Kascak, A F	LERC	Allaire, P E	NAG 3-180	4400
46	UNIV OF VIRGINIA	Kascak, A F	LERC	Barrett, L E	NSG 3177	4425
46	UNIV OF VIRGINIA	Clark, W D	MSFC	Gunter, E J	NAS 8-31951	4416
46	UNIV OF WASHINGTON	Wieting, A R	LARC	Emery, A F	NAG 1-41	4511
46	UNIV OF WASHINGTON	Bill, R C	LERC	Wolak, J	NAG 3-7	4517
46	UNIV WISC PLATTEVILLE	Kiefling, L A	MSFC	Stoll, H W	NAS 8-34506	4637
46	VIRGINIA POLY INST	Chestnutt, D	LARC	Wu, S T	NAG 1-156	4451
46	WASHINGTON UNIVERSTY	Burns, R	MSFC	Haefner, L E	NAS 8-34341	3153
46	WEST VIRGINIA UNIV	Carter, C H	HQ-LC	Padhye, A	NGT 49-001-800	4576
47	ALABAMA A&M UNIV	Williams, J R	MSFC	Lal, R B	NAS 8-32945	1002
47	ARIZONA STATE UNIV	Reeves, F A	MSFC	Wagner, J B	NAS 8-32937	1108
47	ATLANTA UNIVERSITY	Bryan, C J	KSC	Korda, E J	NAG10-3	2178
47	CASE WESTERN RESERVE	Gray, H R	LERC	Ebert, L J	NAG 3-30	3569
47	CASE WESTERN RESERVE	Thompson, R L	LERC	Manson, S S	NAG 3-39	3570
47	CASE WESTERN RESERVE	Halford, G R	LERC	Manson, S S	NAG 3-46	3571
47	CASE WESTERN RESERVE	Smialek, J L	LERC	Ebert, L J	NAG 3-49	3572
47	CASE WESTERN RESERVE	Smialek, J L	LERC	Ebert, L J	NAG 3-58	3573
47	CASE WESTERN RESERVE	Serafini, T T	LERC	Ritchey, W M	NAG 3-163	3585
47	CASE WESTERN RESERVE	Aukerman, C A	LERC	Dybbs, A	NSG 3040	3606
47	CASE WESTERN RESERVE	Scheuermann, C M	LERC	Erert, L J	NSG 3246	3616
47	CASE WESTERN RESERVE	Gedwill, M A	LERC	Ebert, L J	NSG 3252	3618
47	CASE WESTERN RESERVE	Smialek, J L	LERC	Halloran, J W	NSG 3291	3625
47	CASE WESTERN RESERVE	Hirschberg, M H	LERC	Powell, N L	NSG 7035	3626
47	CLEMSON UNIV-CLEMSON	Nunes, A C	MSFC	Thompson, R G	NAS 8-33524	3970
47	CLEMSON UNIV-CLEMSON	Nunes, A C	MSFC	Thompson, R G	NAS 8-33805	3971
47	CLEVELAND STATE UNIV	Nary, A	LERC	Hemann, J H	NAG 3-106	3629
47	CLEVELAND STATE UNIV	Herbell, T P	LERC	Yeh, H C	NSG 3259	3644
47	COLORADO STATE UNIV	Kerslake, W R	LERC	Wilbur, P J	NAG 3-25	1880
47	COLUMBIA UNIVERSITY	Stephens, J R	LERC	Tien, J K	NAG 3-57	3314
47	CORNELL UNIVERSITY	Brown, G V	LERC	Ruoff, A L	NSG 7488	3385
47	DARTMOUTH COLLEGE	Whittenberger, J D	LERC	Schulson, E M	NAG 3-13	3186
47	DARTMOUTH COLLEGE	Bill, R C	LERC	Kennedy, F E, Jr	NSG 3253	3191
47	DREXEL UNIVERSITY	Poe, C C, Jr	LARC	Awerbuch, J	NSG 1606	3833
47	DREXEL UNIVERSITY	Glasgow, T K	LERC	Apelian, D	NAG 3-14	3822
47	DREXEL UNIVERSITY	Grimes, H H	LERC	Koczak, M J	NSG 3128	3835
47	GEORGE WASHINGTON U	Roderick, G L	LARC	Liebowitz, H	NAG 1-158	2036
47	GEORGE WASHINGTON U	Swann, R T	LARC	Liebowitz, H	NCC 1-36	2049
47	GEORGIA INST OF TECH	Johnston, M H	MSFC	Brown, J L	NAS 8-33438	2209
47	JOHNS HOPKINS UNIV	Heyman, J S	LARC	Green, R E, Jr	NAG 1-211	2593
47	MASS INST OF TECH	Johnston, N J	LARC	McGarry, F J	NSG 1504	2916
47	MASS INST OF TECH	Weinberg, I	LERC	Gatos, H C	NSG 3017	2924
47	MASS INST OF TECH	Vary, A	LERC	Williams, J H, Jr	NSG 3210	2930
47	MASS INST OF TECH	Vitale, J A	HQ-ET	Gatos, H C	NSG 7331	2942
47	MASS INST OF TECH	Vitale, J A	HQ-ET	Witt, A F	NSG 7645	2949
47	MICHIGAN STATE UNIV	Halford, G R	LERC	Martin, J F	NAG 3-51	2981
47	MICHIGAN TECH UNIV	Barrett, C A	LERC	Heckel, R W	NSG 3215	2991
47	NO CAR A&T STATE U	Buckley, J D	LARC	Botros, B M	NSG 1516	3532
47	OHIO STATE UNIV	Bill, R C	LERC	Black, J T	NSG 3164	3686
47	OHIO STATE UNIV	Vary, A	LERC	Fu, L S	NSG 3269	3689
47	OLD DOMINION UNIV	Outlaw, R A	LARC	Heinbockel, J H	NAG 1-148	4355
47	OLD DOMINION UNIV	Illg, W	LARC	Dwivedi, S N	NAG 1-191	4358
47	OLD DOMINION UNIV	Illg, W	LARC	Goghia, G L	NAG 1-196	4359
47	PENN STATE U-UNIV PK	Fripp, A L	LARC	White, W B	NSG 1387	3898
47	PENN STATE U-UNIV PK	Barranger, J P	LERC	Bradt, R C	NAG 3-68	3859



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
47	PENN STATE U-UNIV PK	Powell, J A	LERC	Spear, K E	NAG 3-177	3861
47	PURDUE UNIVERSITY	Stephens, J R	LERC	Radavich, J F	NAG 3-59	2400
47	RENSSELAER POLY-NY	Dicus, D L	LARC	Ansell, G S	NSG 1510	3443
47	RENSSELAER POLY-NY	Miner, R V	LERC	Duquette, D J	NAG 3-22	3426
47	RENSSELAER POLY-NY	Powell, J A	LERC	Diefen, R J	NAG 3-203	3431
47	RENSSELAER POLY-NY	Moore, W W , Jr	MSFC	Glicksman, M E	NAS 8-32425	3434
47	RENSSELAER POLY-NY	Schaefer, D A	MSFC	Wiedemeier, H	NAS 8-32936	3436
47	RENSSELAER POLY-NY	Greenfield, M A	HQ-RT	Loewry, R G	NGL 33-018-003	3441
47	RICE UNIVERSITY	Fallon, R A	MSFC	Margrave, J	NAS 8-33199	4060
47	SAN JOSE STATE UNIV	Ricciutello, S R	ARC	Anderson, R N	NCC 2-3	1360
47	SAN JOSE STATE UNIV	Nelson, H G	ARC	Clements, L	NCC 2-137	1378
47	SAN JOSE STATE UNIV	Nelson, H G	ARC	Pizzo, P P	NCC 2-155	1382
47	STANFORD UNIVERSITY	Nelson, H G	ARC	Heinemann, K	NCC 2-103	1464
47	STATE U NY-STONY BRK	Miller, R A	LERC	Herman, H	NAG 3-164	3472
47	TENNESSEE STATE UNIV	Young, S G	LERC	Chaudhuri, D K	NAG 3-125	3989
47	TEXAS A&M UNIVERSITY	Thompson, R L	LERC	Haisler, W E	NAG 3-31	4088
47	TEXAS A&M UNIVERSITY	Serafini, J F	LERC	Malguarnera, S C	NAG 3-129	4089
47	TUSKEGEE INSTITUTE	Titran, R H	LERC	Ramirez, R P	NSG 3154	1027
47	UNIV ALA-HUNTSVILLE	Whitaker, A F	MSFC	Davis, J H	NAS 8-33377	1044
47	UNIV ALA-HUNTSVILLE	Bass, B G	MSFC	Hendriks, J B	NAS 8-33542	1049
47	UNIV ALA-HUNTSVILLE	Rathz, L L	MSFC	Davis, J H	NAS 8-33548	1050
47	UNIV ALA-HUNTSVILLE	Johnston, M H	MSFC	Davis, J H	NAS 8-33810	1054
47	UNIV ALA-HUNTSVILLE	McClure, J C	MSFC	Davis, J H	NAS 8-33811	1055
47	UNIV ALA-HUNTSVILLE	Whitaker, A F	MSFC	Wagner, P E	NAS 8-34338	1065
47	UNIV OF ARIZONA	Thompson, R L	LERC	Wirsching, P H	NAG 3-41	1129
47	UNIV CALIF-L ANGELES	Barranger, J P	LERC	MacKengie, J D	NAG 3-69	1628
47	UNIV CALIF-L ANGELES	Williams, J R	MSFC	Bunshah, R F	NAS 8-33115	1648
47	UNIV CALIF-S BARBARA	Nelson, H G	ARC	Shanabarger, M R	NCC 2-63	1793
47	UNIV OF CENTRAL FLA	Bianca, C	MSFC	Carroll, W E	NAS 8-32835	2120
47	UNIV OF CINCINNATI	Miner, R V , Jr	LERC	Antolovich, S D	NSG 3147	3723
47	UNIV OF CINCINNATI	Hirschberg, M H	LERC	Antolovich, S D	NSG 3263	3726
47	UNIV OF DAYTON	Gourash, F	LERC	Strnat, K J	DEN 3-189	3728
47	UNIV OF DAYTON	McDaniels, D L	LERC	Bless, S J	NAS 3-22353	3732
47	UNIV OF DELAWARE	Vernon, R W	LERC	Birchall, C E	NSG 3184	2025
47	UNIV OF FLORIDA	Outlaw, R A	LARC	Holloway, P H	NAG 1-154	2127
47	UNIV OF FLORIDA	Dutta, S	LERC	Hench, L L	NSG 3254	2157
47	UNIV HOUSTON-HOUSTON	Viegas, J R	ARC	Hussain, A K	NSG 2337	4157
47	UNIV OF IOWA	Rummler, D R	LARC	Wu, H C	NSG 1499	2484
47	UNIV MICH-ANN ARBOR	Fichter, W B	LARC	Felbeck, D K	NGR 23-005-528	3050
47	UNIV MICH-ANN ARBOR	Lauver, R W	LERC	Yeh, G S	NSG 3192	3055
47	U MINN-MNPLS-ST PAUL	Card, M F	LARC	Plunkett, R	NAG 1-99	3070
47	UNIV ORGEON-HLTH CTR	Moore, W W , Jr	MSFC	Brooks, D E	NAS 8-33575	3808
47	UNIV OF PITTSBURGH	Kohl, F J	LERC	Birks, N	NAG 3-44	3926
47	UNIV OF PITTSBURGH	Kohl, F J	LERC	Meier, G H	NSG 3214	3940
47	U PUERTO RICO-MAYAGZ	Goldberg, S	HQ-LG	Sasser, D S	NAGW 198	4648
47	UNIV OF TORONTO	Baker, D J	LARC	Tennyson, R C	NSG 7409	4649
47	UNIV OF UTAH	Fripp, A L	LARC	Rosenberger, F E	NSG 1534	4281
47	UNIV OF VIRGINIA	Fripp, A L	LARC	Jesser, W A	NSG 1652	4423
47	UNIV OF VIRGINIA	Behrendt, D R	LERC	Wawner, F E , Jr	NSG 3242	4426
47	UNIV OF WASHINGTON	Goldstein, H E	ARC	Mueller, J I	NAG 2-120	4516
47	UNIV OF WASHINGTON	Bersch, C	HQ-RT	Mueller, J I	NAGW 199	4534
47	UNIV OF WASHINGTON	Bersch, C	HQ-RT	Mueller, J I	NGL 48-002-004	4549
47	UNIV OF WYOMING	Obrien, T K	LARC	Adams, D F	NAS 1-16557	4644
47	UNIV OF WYOMING	Dicarlo, J A	LERC	Adams, D F	NSG 3217	4647
47	VANDERBILT UNIVERSTY	Nichols, R L	MSFC	Kinser, D L	NAS 8-32695	4025
47	VIRGINIA POLY INST	Nelson, H G	ARC	Brinson, H F	NCC 2-71	4481
47	VIRGINIA POLY INST	Johnston, N J	LARC	Wilkes, G L	NAG 1-78	4438
47	VIRGINIA POLY INST	Sykes, G F	LARC	McGrath, J E	NAG 1-106	4442

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47	VIRGINIA POLY INST	Tenney, D R	LARC	Houska, C R	NSG 1470	4490
47	VIRGINIA POLY INST	Everett, R A , Jr	LARC	Morris, D H	NSG 1571	4493
47	VIRGINIA POLY INST	Baker, D J	LARC	Hyer, M W	NSG 1621	4496
47	VIRGINIA POLY INST	Stephens, J R	LERC	Louthan, M R , Jr	NAG 3-78	4460
47	VIRGINIA POLY INST	Vary, A	LERC	Henneke, E G	NAG 3-172	4464
47	VIRGINIA POLY INST	Kerslake, W R	LERC	Dwight, D W	NSG 3204	4499
47	YALE UNIVERSITY	Kohl, F J	LERC	Rosner, D E	NSG 3107	2015
49	CALIF INST OF TECH	Carter, C H	HQ-LC	Albee, A L	NGT 05-003-790	1288
49	CAL POLY ST U-S LUIS	Saltzman, E J	DFRC	Sandlin, D R	NAG 4-7	1310
49	CASE WESTERN RESERVE	Meyer, G	ARC	Martin, C	NAG 2-82	3565
49	CASE WESTERN RESERVE	Doolin, B F	ARC	Martin, C	NSG 2384	3605
49	CASE WESTERN RESERVE	Seasholtz, R G	LERC	Edwards, R V	NAG 3-2	3566
49	CASE WESTERN RESERVE	Wintucky, E G	LERC	Bahniuk, E	NAS 3-21946	3594
49	CASE WESTERN RESERVE	Riley, T J	LERC	Mann, J A	NAS 3-22549	3598
49	CASE WESTERN RESERVE	Finnegan, P M	LERC	Dybbis, A	NCC 3-8	3602
49	CASE WESTERN RESERVE	Carter, C H	HQ-LC	Prahl, J M	NGT 36-027-011	3604
49	CLEVELAND STATE UNIV	Stenger, F J	LERC	Donoghue, J F	NAG 3-84	3628
49	COLLEGE OF WM & MARY	Finelli, G B	LARC	Schaefer, M K	NSG 1625	4319
49	COLUMBIA UNIVERSITY	Stephens, D G	LARC	Galanter, E	NSG 1550	3337
49	DE ANZA COLLEGE	Lum, H	ARC	Frederick, V	NCC 2-31	1331
49	DREXEL UNIVERSITY	Meyer, G	ARC	Calise, A J	NAG 2-8	3819
49	DUKE UNIVERSITY	Hayduk, R J	LARC	Melosh, R J	NSG 1647	3524
49	FORT LEWIS COLLEGE	Kruger, R	GSFC	Williams, R E	NAG 5-1	1907
49	GEORGE WASHINGTON U	Morakis, J C	GSFC	Helgert, H J	NSG 5109	2060
49	GEORGE WASHINGTON U	Wolfer, B	JSC	Logsdon, J	NAS 9-16461	2043
49	GEORGE WASHINGTON U	Carter, C H	HQ-LC	Silverman, B G	NGT 09-010-800	2056
49	GEORGIA INST OF TECH	Palmer, E A	ARC	Rouse, W B	NAG 2-123	2190
49	GEORGIA INST OF TECH	Vykukal, H C	ARC	Olson, L H	NCC 2-119	2216
49	GEORGIA INST OF TECH	Vykukal, H C	ARC	Olson, L H	NSG 2356	2223
49	HOWARD UNIVERSITY	Hui, P S	GSFC	Choudhury, A K	NAS 5-24251	2076
49	HOWARD UNIVERSITY	Mundy, J R	GSFC	Cox, E L	NCA 5-29	2080
49	HOWARD UNIVERSITY	Chapman, J W	GSFC	Cox, E L	NCA 5-91	2081
49	HOWARD UNIVERSITY	Mundy, J R	GSFC	Gill, T L	NGT 09-011-080	2084
49	HOWARD UNIVERSITY	Hammer, H A	LARC	Bainum, P M	NSG 1414	2088
49	IOWA STATE UNIV	Pollack, J B	ARC	Iversen, J D	NCA 2-340802	2448
49	IOWA STATE UNIV	Anderson, M S	LARC	Lewin, W	NSG 1372	2454
49	JOHNS HOPKINS UNIV	Degnan, J J	GSFC	Davidson, F	NCC 5-24	2612
49	LAFAYETTE COLLEGE	Gainer, P A	LARC	Guy, W J	NAG 1-45	3840
49	LEHIGH UNIVERSITY	Chamis, C C	LERC	Sih, G C	NSG 3179	3849
49	LINCOLN UNIV-PA	Mundy, J R	GSFC	Miller, R H.	NCA 5-98	3852
49	MASS INST OF TECH	Stewart, J D	ARC	Young, L R	NAG 2-12	2823
49	MASS INST OF TECH	Doolin, B F	ARC	Athans, M	NGL 22-009-124	2897
49	MASS INST OF TECH	Burkhart, J A	LERC	Marston, P G	NAG 3-100	2837
49	MASS INST OF TECH	Labus, T L	LERC	Wachman, H Y	NAG 3-173	2838
49	MASS INST OF TECH	Chamis, C C	LERC	McGarry, F J	NSG 3044	2925
49	MASS INST OF TECH	Braun, W. H	LERC	Kerrebrock, J L	NSG 3187	2928
49	MISSISSIPPI STATE U	Sims, J L	MSFC	Kassner, J L , Jr	NAS 8-32912	3106
49	MORGAN STATE UNIV	Friedman, D S	GSFC	Taylor, J H	NAS 5-23558	2627
49	NAVAJO COMMUNITY COL	Whitley, S L	NSTL	Isher, S F	NSG 737	1122
49	NEW MEX ST U-LAS CR	Pincus, B R	GSFC	Lawrence, H	NAS 5-24241	3275
49	NEW MEX ST U-LAS CR	Pincus, B R	GSFC	Lawrence, H.	NAS 5-26332	3276
49	NEW YORK UNIVERSITY	Sarsfield, L P	LERC	Ting, L	NSG 3059	3409
49	NO CAR A&T STATE U	Carter, C H	HQ-LC	Abu-saba, E G	NGT 34-012-800	3530
49	OHIO STATE UNIV	Doolin, B F	ARC	Wyman, B.	NAG 2-34	3656
49	OHIO STATE UNIV	Bowles, K J	LERC	Smith, E E	NSG 3235	3687
49	OKLAHOMA STATE UNIV	West, W W	WFC	Buck, R F	NAS 6-2970	3766
49	OKLAHOMA STATE UNIV	Boykin, F M	WFC	Fike, R M	NAS 6-3103	3767
49	OKLAHOMA STATE UNIV	Carr, R E	WFC	Roth, L O	NSG 6018	3771

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49	OLD DOMINION UNIV	Hamer, H A	LARC	Goglia, G L	NAG 1-102	4350
49	OLD DOMINION UNIV	Wieting, A R	LARC	Thornton, E A	NSG 1321	4379
49	OLD DOMINION UNIV	Carter, C H	HQ-LC	Goglia, G L	NGT 47-003-029	4374
49	SAN JOSE STATE UNIV	Fish, R H	ARC	Meyer, L	NAG 2-99	1348
49	SAN JOSE STATE UNIV	Mansfield, J A	ARC	Holmstrom, F	NCC 2-114	1374
49	SOUTHEASTN OKLA ST U	Bivins, R	HQ-ET	Oliver, R	NASW 3180	3773
49	SOUTHERN METHODIST U	Moore, W L	MSFC	Crawford, G W	DEN 8-22	4078
49	STANFORD UNIVERSITY	Lum, H	ARC	Harrison, D C	NCC 2-113	1467
49	STANFORD UNIVERSITY	Erzberger, H	ARC	Bryson, A E	NGL 05-020-007	1475
49	STANFORD UNIVERSITY	Wolfe, J H	ARC	Peterson, A M	NSG 2121	1494
49	STANFORD UNIVERSITY	Carter, C H	HQ-LC	Bershadar, D	NGT 05-020-412	1488
49	TENNESSEE STATE UNIV	Pohly, J G	HQ-LC	Malkani, M J	NGT 43-014-750	3990
49	TEXAS A&M UNIVERSITY	Strouhal, G	JSC	Porteiro, J F	NAS 9-16443	4116
49	TEXAS A&M UNIVERSITY	Carter, C H	HQ-LC	Norton, D J	NGT 44-001-800	4125
49	TUSKEGEE INSTITUTE	Pohly, J G	HQ-LC	Dybczak, Z W	NGT 01-005-750	1026
49	UNIV ALA-HUNTSVILLE	Carter, C H	HQ-LC	Karr, G R	NGT 01-008-021	1073
49	UNIV ALA-UNIVERSITY	Carter, C H	HQ-LC	Barfield, B F	NGT 01-002-099	1080
49	UNIV OF ARIZONA	Wagnon, F W	MSFC	Krider, P	NAS 8-33718	1172
49	UNIV OF ARIZONA	Barnes, T G	MSFC	Wolfe, W L	NAS 8-33720	1173
49	UNIV CALIF-L ANGELES	Sobieski, J	LARC	Schmit, L A, Jr	NSG 1490	1669
49	UNIV OF CINCINNATI	Walz, J E	LARC	Nayfeh, A H	NSG 1185	3719
49	UNIV OF CONNECTICUT	Halford, G R	LERC	Jordan, E H	NAG 3-160	1997
49	UNIV OF FLORIDA	Nelsen, E D	GSFC	Green, A E	NAS 5-22908	2136
49	UNIV HOUSTON-HOUSTON	Carter, C H	HQ-LC	Huang, C J	NGT 44-005-115	4152
49	UNIV ILLINOIS-CHICGO	Pollack, J B	ARC	Cogley, A C	NCA 2-330101	2342
49	UNIV OF KANSAS	Saltzman, E J	DFRC	Muirhead, V U	NAG 4-8	2504
49	UNIV OF KANSAS	Saltzman, E J	DFRC	Muirhead, V U	NSG 4023	2533
49	UNIV OF KANSAS	Childress, O S	LARC	Smith, H W	NAG 1-147	2496
49	UNIV MARYLAND-COL PK	Mundy, J R	GSFC	Wockenfuss, W A	NCA 5-28	2687
49	UNIV MARYLAND-COL PK	Degnan, J J	GSFC	Hochuli, U E	NSG 5042	2717
49	UNIV MARYLAND-COL PK	McGarry, F E	GSFC	Basili, V R	NSG 5123	2718
49	UNIV MARYLAND-COL PK	Carter, C H	HQ-LC	Emad, F P	NGT 21-002-254	2702
49	UNIV OF NEW MEXICO	Pohly, J G	HQ-LC	Robertson, M	NGT 32-004-770	3294
49	UNIV OF NOTRE DAME	Doolin, B F	ARC	Sain, M K	NAG 2-35	2433
49	UNIV OF RHODE ISLAND	Meintel, A J	LARC	Dally, J W	NAG 1-173	3963
49	UNIV OF SANTA CLARA	Lum, H	ARC	Healy, T J	NCC 2-128	1841
49	UNIV OF SANTA CLARA	Carter, C H	HQ-LC	Healy, T J	NGT 05-017-998	1843
49	UNIV OF SOUTHERN CAL	Halley, H	ARC	Unavailable	NAS 2-10935	1859
49	UNIV STHN COLORADO	Meyer, G	ARC	Dunn, W R	NCC 2-91	1992
49	UNIV SO MISSISSIPPI	Whitley, S L	NSTL	Brundage, W G	NAS13-95	3121
49	UNIV TENNESSEE-KNOXV	Carter, C H	HQ-LC	Antar, B N	NGT 43-001-802	4018
49	UNIV TEXAS-ARLINGTON	Smith, J M	LERC	Wilson, D R	NSG 3255	4168
49	UNIV TEXAS-AUSTIN	Kiefling, L A	MSFC	Craig, R C	NAS 8-33980	4185
49	UNIV OF TOLEDO	Glasgow, J C	LERC	Keith, T G, Jr	NCC 3-5	3747
49	UNIV OF TOLEDO	Labus, T L	LERC	Dewitt, K J	NSG 3121	3748
49	UNIV OF VIRGINIA	Lamb, G M	GSFC	Mattauch, R J	NAS 5-24218	4410
49	UNIV OF VIRGINIA	Loendorf, D D	LARC	Ortega, J M	NAG 1-46	4396
49	UNIV OF VIRGINIA	Conner, D W	LARC	Kuhlthau, A R	NAS 1-14908	4406
49	VIRGINIA POLY INST	Davis, J G, Jr	LARC	Herakovich, C T	NAG 1-128	4446
49	VIRGINIA POLY INST	Hayduk, R J	LARC	Kamat, M P	NAG 1-139	4448
49	VIRGINIA POLY INST	Davis, J D, Jr	LARC	Herakovich, C T	NCC 1-15	4479
51	ALABAMA A&M UNIV	Snyder, R S	MSFC	Sharma, G C	NSG 8067	1007
51	ALCORN STATE UNIV	Wolverton, B C	NSTL	Latif, A	NSG 8036	3100
51	BAYLOR COL OF MED	Ferandin, J	ARC	Dunn, C D	NAS 2-10801	4031
51	BOSTON UNIVERSITY	Devincenzi, D L	HQ-SB	Campbell, S E	NAGW 141	2752
51	CALIF INST OF TECH	MacElroy, R D	ARC	Stephanoploulos A, G N.	NCC 2-122	1271
51	CAL STATE U-L ANGELES	Hochstein, L I	ARC	Yavarkovsky, J H	NSG 2199	1326
51	CASE WESTERN RESERVE	Halstead, T W	HQ-SB	Keefe, J R	NAGW 83	3592

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51	COLUMBIA UNIVERSITY	Holton, E M	ARC	Doty, S B	NCA 2-172101	3328
51	COLUMBIA UNIVERSITY	Halstead, T W	HQ-SB	Doty, S B	NAGW 238	3318
51	CORNELL UNIVERSITY	Halstead, T W	HQ-SB	Leopold, A C	NAGW 3	3350
51	CORNELL UNIVERSITY	Young, R S	HQ-SB	MacDonald, R E	NSG 7235	3381
51	CORNELL UNIVERSITY	Devincenzi, D L	HQ-SB	Gibson, J	NSG 7529	3387
51	EMORY UNIVERSITY	Holton, E M	ARC	Popovic, V P	NAG 2-87	2180
51	EMORY UNIVERSITY	Ferandin, J A	ARC	Popovic, V P	NAS 2-10527	2181
51	FLORIDA A&M UNIV	Winget, C M	ARC	Holder, M S	NAG 2-81	2101
51	GEORGIA INST OF TECH	Young, R S	HQ-SB	Hubbard, J S	NSG 7069	2231
51	HARDIN-SIMMONS UNIV	Devincenzi, D L	HQ-SB	Foster, T L	NGR 44-095-001	4040
51	HARVARD UNIVERSITY	Ferandin, J	ARC	Moore-edde, M C	NAS 2-10547	2778
51	HARVARD UNIVERSITY	Billings, C E	ARC	Moore-edde, M C	NCA 2-284101	2790
51	INDIANA U-BLOOMINGTN	Halstead, T W	HQ-SB	Malacinski, G M	NAGW 60	2384
51	LOYOLA UNIV-CHICAGO	Halstead, T W	HQ-SB	Hayes, A B	NAGW 131	2283
51	MASS INST OF TECH	Daunton, N G	ARC	Young, L R	NAG 2-88	2826
51	MASS INST OF TECH	Daunton, N G	ARC	Bizzi, E	NAG 2-126	2832
51	MASS INST OF TECH	MacElroy, R D	ARC	Rich, A	NCA 2-425801	2890
51	MASS INST OF TECH	Devincenzi, D L	HQ-SB	Biemann, K	NGR 22-009-005	2902
51	MICHIGAN STATE UNIV	Halstead, T W	HQ-SB	Bandurski, R S	NAGW 97	2984
51	OHIO STATE UNIV	Mehler, W R	ARC	Lim, D J	NSG 2220	3685
51	OKLAHOMA STATE UNIV	Devincenzi, D L	HQ-SB	Vishniac, H S	NAGW 26	3764
51	PA ST U-HERSHEY MED	Ferandin, J	ARC	Severs, W B	NAS 2-10521	3853
51	PA ST U-HERSHEY MED	Keil, L	ARC	Severs, W B	NCC 2-127	3854
51	PENN STATE U-UNIV PK	Grindeland, R	ARC	Hymer, W	NCA 2-589101	3887
51	PENN STATE U-UNIV PK	Morrison, D R	JSC	Hymer, W C	NAS 9-15566	3884
51	PENN STATE U-UNIV PK	Morrison, D	JSC	Odd, P T	NAS 9-15584	3885
51	PRINCETON UNIVERSITY	Halstead, T W	HQ-SB	Jacobs, W P	NSG 7280	3250
51	PURDUE UNIVERSITY	Ferandin, J	ARC	Mitchell, C A	NAS 2-10514	2407
51	PURDUE UNIVERSITY	Halstead, T W	HQ-SB	Mitchell, C A	NSG 7278	2432
51	RICE UNIVERSITY	Ferandin, J	ARC	Campbell, J	NAS 2-10519	4057
51	ROCKEFELLER UNIV	MacElroy, R D	ARC	Loew, G H	NCA 2-630001	3448
51	ROCKEFELLER UNIV	Daunton, N G	ARC	Wilson, V J	NSG 2380	3449
51	SAN DIEGO STATE UNIV	Halstead, T W	HQ-SB	Rayle, D	NAGW 230	1339
51	SAN FRAN STATE UNIV	Boyce, J M	HQ-SL	Orenberg, J B	NSG 7512	1345
51	SAN JOSE STATE UNIV	Daunton, N G	ARC	Ginsberg, R	NCA 2-675002	1350
51	SAN JOSE STATE UNIV	Woeller, F H	ARC	Ling, A C	NCA 2-675008	1354
51	SAN JOSE STATE UNIV	Deal, P H	ARC	Haight, R D	NCA 2-675907	1359
51	SAN JOSE STATE UNIV	Suri, K P	ARC	Fox, R A	NCC 2-72	1370
51	SAN JOSE STATE UNIV	Winget, C M	ARC	Holley, D C	NCC 2-141	1379
51	STANFORD UNIVERSITY	Klein, H P	ARC	Pittendrigh, C S	NAG 2-122	1398
51	STANFORD UNIVERSITY	Ferandin, J	ARC	Reaven, G M	NAS 2-10512	1414
51	STANFORD UNIVERSITY	Holton, E	ARC	Feldman, D	NCA 2-745007	1430
51	STANFORD UNIVERSITY	Goldwater, D	ARC	Debusk, R F	NCA 2-745911	1441
51	STATE UNIV NY-ALBANY	Nolte, R W	JSC	Sulzman, F M	NAS 9-15975	3456
51	STATE U NY-BINGHAMTN	Carter, C H	HQ-LC	Sulzman, F M	NGT 33-188-800	3468
51	STATE U NY-STONY BRK	Ferandin, J	ARC	Krikorian, A D	NAS 2-10520	3483
51	STATE U NY-STONY BRK	Halstead, T W	HQ-SB	Krikorian, A D	NSG 7270	3499
51	TEMPLE UNIVERSITY	Halstead, T W	HQ-SB	Finck, A	NAGW 242	3916
51	TEXAS A&M UNIVERSITY	Lewis, J L	JSC	Stramler, J H	NAS 9-16073	4109
51	TEXAS TECH UNIV	Carter, C H	HQ-LC	Hartman, H B	NGT 44-011-800	4137
51	TULANE UNIVERSITY	MacElroy, R D	ARC	Johnson, E J	NCA 2-800001	2581
51	U MD BALTO PROF SCHL	Ellis, S	ARC	Max, S R	NAG 2-100	2632
51	UNIV ALASKA-FAIRBNKS	MacElroy, R D	ARC	Bloom, A J	NCA 2-20902	1087
51	UNIV OF ARIZONA	Halstead, T W	HQ-SB	Tischler, M	NAGW 227	1157
51	UNIV CALIF-BERKELEY	Ferandin, J A	ARC	Pace, N	NAS 2-10499	1543
51	UNIV CALIF-BERKELEY	Ferandin, J A	ARC	Pace, N	NAS 2-10504	1544
51	UNIV CALIF-BERKELEY	Souza, K	ARC	Pace, N	NAS 2-10658	1545
51	UNIV CALIF-BERKELEY	Klein, H P	ARC	Packer, L	NCA 2-50002	1560

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51	UNIV CALIF-BERKELEY	Devincenzi, D L	HQ-SB	Buchanan, B B	NAGW 211	1540
51	UNIV CALIF-BERKELEY	Halstead, T W	HQ-SB	Feldman, L J	NAGW 239	1541
51	UNIV CALIF-BERKELEY	Halstead, T W	HQ-SB	Pace, N	NSG 7262	1599
51	UNIV CALIF-BERKELEY	Halstead, T W	HQ-SB	Pace, N	NSG 7336	1600
51	UNIV CALIF-DAVIS	Winget, C M	ARC	Chapman, L F	NCA 2-180905	1608
51	UNIV CALIF-DAVIS	Halstead, T W	HQ-SB	Horowitz, J M	NSG 2234	1611
51	UNIV CALIF-DAVIS	Halstead, T W	HQ-SB	Smith, A H	NSG 7493	1613
51	UNIV CALIF-IRVINE	Ellis, S	ARC	Baldwin, K M	NAG 2-107	1615
51	UNIV CALIF-IRVINE	Ferandin, J A	ARC	Baldwin, K M	NAS 2-10522	1620
51	UNIV CALIF-IRVINE	Devincenzi, D L	HQ-SB	Lanyi, T K	NAGW 212	1619
51	UNIV CALIF-L ANGELES	Ellis, S	ARC	Parlow, A	NCA 2-390001	1652
51	UNIV CALIF-RIVERSIDE	Ferandin, J	ARC	Fuller, C A	NAS 2-10536	1695
51	UNIV CALIF-SAN DIEGO	Devincenzi, D L	HQ-SB	Nealson, K H	NAGW 73	1712
51	UNIV CALIF-SAN DIEGO	Devincenzi, D L	HQ-SB	Lewin, R A	NAGW 181	1714
51	UNIV CALIF-SAN FRAN	Mehler, W R	ARC	Snyder, R L	NCA 2-665003	1767
51	UNIV CALIF-SAN FRAN	Callahan, P X	ARC	Cann, C E	NCA 2-665004	1768
51	UNIV CALIF-SAN FRAN	Keil, L C	ARC	Reid, I A	NCA 2-665005	1769
51	UNIV CALIF-SAN FRAN	Keil, L C	ARC	Ramsay, D J	NCA 2-665006	1770
51	UNIV CALIF-SAN FRAN	Holten, E M	ARC	Cann, C E	NCA 2-665008	1772
51	UNIV CALIF-SAN FRAN	MacElroy, R D	ARC	Bhatnagar, R	NCA 2-665101	1773
51	UNIV CALIF-SAN FRAN	Ellis, S	ARC	Rosen, S D	NCA 2-665102	1774
51	UNIV CALIF-SAN FRAN	Keil, L C	ARC	Reid, I A	NCA 2-665103	1775
51	UNIV CALIF-SAN FRAN	Holton, E M	ARC	Arnaud, C D	NCA 2-665902	1776
51	UNIV CALIF-SAN FRAN	Ellis, S	ARC	Riley, D A	NCA 2-665903	1777
51	UNIV CALIF-SAN FRAN	Carter, C H	HQ-LC	Kuntz, I	NGT 05-029-800	1781
51	UNIV CALIF-SAN FRAN	Halstead, T W	HQ-SB	Bikle, D D	NAGW 236	1759
51	UNIV CALIF-SAN FRAN	Devincenzi, D L	HQ-SB	Stoeckenius, W	NSG 7151	1782
51	UNIV CALIF-S BARBARA	Billingham, J	ARC	Valentine, J W	NAG 2-73	1785
51	UNIV OF CHICAGO	Daunton, N G	ARC	Goldberg, J M	NGR 14-001-225	2330
51	UNIV OF CHICAGO	Soffen, G A	HQ-SB	Fernandez, H	NSG 7303	2336
51	UNIV OF CONNECTICUT	Devincenzi, D L	HQ-SB	Leadbetter, E R	NSG 7450	2002
51	UNIV OF FLORIDA	Greenleaf, J E	ARC	Fregly, M J	NCA 2-240101	2144
51	UNIV HOUSTON-HOUSTON	Schneider, H J	JSC	Zlatkis, A	NAS 9-15882	4147
51	UNIV HOUSTON-HOUSTON	Halstead, T W	HQ-SB	Hendrix, D H	NSG 7300	4158
51	UNIV HOUSTON-HOUSTON	Devincenzi, D L	HQ-SB	Fox, G E	NSG 7440	4160
51	UNIV HOUSTON-HOUSTON	Halstead, T W	HQ-SB	Cowles, J R	NSG 9042	4164
51	UNIV OF LOUISVILLE	Ferandin, J A	ARC	Musacchia, X J	NAS 2-10510	2556
51	UNIV OF LOUISVILLE	Mandel, A D	ARC	Sonnenfeld, G	NCA 2-400101	2559
51	UNIV OF LOUISVILLE	Holton, E M	ARC	Musacchia, X J	NSG 2325	2560
51	UNIV OF LOUISVILLE	Halstead, T W	HQ-SB	Musacchia, X J	NAGW 70	2555
51	UNIV MARYLAND-COL PK	Scott, F E	MSFC	Colwell, R	NAS 8-34429	2685
51	UNIV MD-EASTRN SHORE	Trafford, G H	WFC	Albano, M	NSG 6033	2747
51	UNIV OF MIAMI	Ferandin, J A	ARC	Loewenstein, W R	NAS 2-10524	2163
51	UNIV MICH-ANN ARBOR	Ferandin, J	ARC	Kluger, M J	NAS 2-10534	3015
51	UNIV MICH-ANN ARBOR	Ferandin, J A	ARC	Ross, M	NAS 2-10535	3016
51	UNIV MICH-ANN ARBOR	Halstead, T W	HQ-SB	Nace, G W	NAGW 29	3007
51	UNIV MICH-ANN ARBOR	Halstead, T W	HQ-SB	Kaufman, P B	NAGW 34	3009
51	UNIV MICH-ANN ARBOR	Devincenzi, D L	HQ-SB	Gidley, D W	NSG 7452	3061
51	UNIV MICH-ANN ARBOR	Halstead, T W	HQ-SB	Ross, M D	NSG 9047	3063
51	UNIV NEW HAMP-DURHAM	MacElroy, R D	ARC	Moore, B	NCC 2-27	3202
51	U OKLA-HLTH SCI CTR	Heinrich, M R	ARC	Stone, H L	NAS 2-10408	3776
51	U OKLA-HLTH SCI CTR	Ferandin, J	ARC	Stone, H L	NAS 2-10526	3777
51	U OKLA-HLTH SCI CTR	Ferandin, J	ARC	Dowell, R T	NAS 2-10529	3778
51	U OKLA-HLTH SCI CTR	Sandler, H	ARC	Stone, H L	NCA 2-580101	3779
51	UNIV OKLAHOMA-NORMAN	Sandler, H	ARC	Stone, H L	NCA 2-580901	3783
51	UNIV OF PENNSYLVANIA	Halstead, T W	HQ-SB	Brown, A H	NGR 39-010-149	3922
51	UNIV OF PITTSBURGH	Daunton, N G	ARC	Tomko, D L	NCA 2-592901	3932
51	UNIV SAN FRANCISCO	Kraft, L M	ARC	Benton, E V	NCA 2-670101	1821

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51	UNIV SAN FRANCISCO	Young, D R	ARC	Furst, A	NCA 2-670902	1822
51	UNIV SAN FRANCISCO	Kraft, L M	ARC	Benton, E V	NCC 2-47	1823
51	UNIV OF SANTA CLARA	Mandel, A D	ARC	Caren, L D	NCA 2-685002	1827
51	UNIV OF SANTA CLARA	Grindeland, R E	ARC	Fast, T	NCA 2-685003	1828
51	UNIV OF SANTA CLARA	Hochstein, L I	ARC	Tomlinson, G A	NCA 2-685004	1829
51	UNIV SO CAROLINA-COL	Devincenzi, D L	HQ-SB	Rohlfing, D L	NSG 7096	3979
51	UNIV OF SOUTHERN CAL	Devincenzi, D L	HQ-SB	Strehler, B L	NSG 7367	1875
51	UNIV TEXAS-AUSTIN	Halstead, T	HQ-SB	Roux, S J	NSG 7480	4214
51	U TEX MED BRANCH-GAL	Daunton, N G	ARC	Perachio, A A	NAG 2-26	4251
51	U TEX MED BRANCH-GAL	Ferandin, J	ARC	Correia, M J	NAS 2-10502	4252
51	U TEX MED BRANCH-GAL	Ferandin, J	ARC	Fabricant, J D	NAS 2-10513	4253
51	U TEX MED BRANCH-GAL	Carter, C H	HQ-LC	Correia, M J	NGT 44-088-800	4256
51	U TEX HLTH SC CTR-DA	Halstead, T W	HQ-SB	Templeton, G H	NAGW 140	4258
51	U TEX HLTH SC CTR-HU	Rasmussen, D	ARC	Booth, F W	NAS 2-10500	4260
51	U TEX HLTH SC CTR-HU	Smith, M	JSC	Booth, F	NAS 9-15388	4261
51	UNIV OF UTAH	Holton, E M	ARC	Jee, W S	NAG 2-108	4269
51	UNIV OF VIRGINIA	Holton, E M	ARC	Pitts, G C	NSG 2225	4424
51	UNIV OF WASHINGTON	Ellis, S	ARC	Ellis, S	NAG 2-80	4515
51	UNIV WISC-MADISON	Devincenzi, D L	HQ-SB	Fitch, W M	NSG 7521	4635
51	UTAH STATE UNIV	Halstead, T W	HQ-SB	Salisbury, F B	NSG 7567	4301
51	WAKE FOREST UNIV	Ferandin, J	ARC	Hutchins, P M	NAS 2-10523	3561
51	WAKE FOREST UNIV	Halstead, T W	HQ-SB	Jaffe, M J	NAGW 96	3560
51	WORCESTER POLY INST	Devincenzi, D L	HQ-SB	Danielli, J F	NSG 7154	2978
51	WRIGHT STATE UNIV	Daunton, N G	ARC	Crampton, G H	NCA 2-875002	3758
51	YALE UNIVERSITY	Halstead, T W	HQ-SB	Galston, A W	NSG 7290	2017
54	BOSTON UNIVERSITY	Devincenzi, D L	HQ-SB	Golubic, S	NSG 7588	2764
54	COLORADO STATE UNIV	Barnes, C M	JSC	Lett, J T	NAG 9-10	1888
54	COLORADO STATE UNIV	Carter, C H	HQ-LC	Smith, J A	NGT 06-002-800	1896
54	FLORIDA STATE UNIV	Devincenzi, D L	HQ-SB	Friedmann, E I	NSG 7337	2114
54	SAN JOSE STATE UNIV	Klein, H P	ARC	Weaver, E C	NCA 2-675003	1351
54	STATE U NY-STONY BRK	Bredt, J H	HQ-SB	Slobodkin, L B	NAGW 144	3479
54	TEXAS A&M UNIVERSITY	Zill, L P	ARC	Fong, F	NCC 2-102	4120
54	TUSKEGEE INSTITUTE	Philpott, D E	ARC	Sapp, W J	NCC 2-12	1025
54	UNIV CALIF-L ANGELES	Daunton, N G	ARC	Markham, C H	NGR 05-007-418	1668
54	UNIV CALIF-S BARBARA	MacElroy, R D	ARC	Botkin, D	NCA 2-680101	1792
54	UNIV CALIF-S BARBARA	Bredt, J H	HQ-SB	Botkin, D B	NAGW 231	1788
54	UNIV CALIF-S BARBARA	Bredt, J H	HQ-SB	Botkin, D B	NASW 3392	1791
54	UNIV MD-EASTRN SHORE	Trafford, G H	WFC	Hung, Y W	NAG 6-4	2741
54	UNIV OF SANTA CLARA	Deal, P H	ARC	Tomlinson, G A	NCA 2-685008	1832
54	UNIV OF SO FLORIDA	Billingham, J	ARC	Briggs, J C	NAG 2-74	2174
54	UTAH STATE UNIV	Nachtwey, D S	JSC	Caldwell, M M	NAS 9-14871	4294
55	NO CAROLINA STATE U	Zill, L P	ARC	Raper, C D	NCC 2-101	3551
55	PURDUE UNIVERSITY	Zill, L P	ARC	Mitchell, C A	NCC 2-100	2417
55	SO DAKOTA STATE UNIV	Salomonson, V V	GSFC	Harlan, C	NAG 5-37	3982
55	TEXAS A&M UNIVERSITY	Hancock, K J	JSC	Newton, R W	NAS 9-16369	4113
55	UNIV CALIF-DAVIS	Zill, L P	ARC	Huffaker, R C	NCC 2-99	1610
55	UNIV MD-EASTRN SHORE	Devincenzi, D L	HQ-SB	Joshi, J M	NSG 7470	2749
55	UNIV WISC-MADISON	Zill, L P	ARC	Tibbitts, T W	NCC 2-136	4621
55	UTAH STATE UNIV	Zill, L P	ARC	Salisbury, F B	NCC 2-139	4295
56	BAYLOR COL OF MED	Homick, J L	JSC	Workman, G L	NAS 9-14546	4032
56	BAYLOR COL OF MED	Leach, C S	JSC	Alfrey, C	NAS 9-14662	4033
56	BAYLOR COL OF MED	Leach, C S	JSC	Dunn, C D	NAS 9-16180	4037
56	BAYLOR COL OF MED	Pierson, D L	JSC	Knight, V	NAS 9-16280	4038
56	BAYLOR COL OF MED	Cintron, N M	JSC	Diferrante, N	NAS 9-16387	4039
56	CASE WESTERN RESERVE	Weigand, A J	LERC	Gibbons, D F	NAG 3-12	3567
56	CASE WESTERN RESERVE	Kerslake, W R	LERC	Hottel, T	NAG 3-115	3581
56	CASE WESTERN RESERVE	Weigand, A J	LERC	Gibbons, D F	NAS 3-22443	3597
56	CASE WESTERN RESERVE	Kerslake, W R	LERC	Gibbons, D F	NSG 3151	3608

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56	CASE WESTERN RESERVE	Wiegand, A J	LERC	Gibbons, D F	NSG 3282	3623
56	CLEMSON UNIV-CLEMSON	Kerslake, W R	LERC	Vanrecum, A F	NAG 3-116	3969
56	CLEMSON UNIV-CLEMSON	Weigand, A J	LERC	Park, J B	NSG 3225	3973
56	COL MED & DENT-NJ	Sharp, J C	ARC	Natelson, B H	NCC 2-40	3209
56	COLUMBIA UNIVERSITY	Young, D R	ARC	Pawluk, R J	NCA 2-172102	3329
56	COLUMBIA UNIVERSITY	Wintucky, E G	LERC	Pawluk, R J	NAG 3-15	3313
56	DREXEL UNIVERSITY	Altchuler, S I	JSC	Kamel, I L	NAS 9-15915	3830
56	FLORIDA A&M UNIV	Alterescu, S	GSFC	Fresh, F A	NAS 5-25165	2102
56	HARVARD UNIVERSITY	Leach, C S	JSC	Hollenberg, N K	NAG 9-17	2775
56	HARVARD UNIVERSITY	Leach, C S	JSC	Moore-edde, M C	NSG 9054	2811
56	HOWARD UNIVERSITY	Alterescu, S	GSFC	Chang, P	NAS 5-23799	2074
56	HOWARD UNIVERSITY	Yin, L I	GSFC	Ferguson, G A	NSG 5268	2091
56	INDIANA U-BLOOMINGTN	Greenleaf, J E	ARC	Elizondo, R	NCA 2-335001	2388
56	JOHNS HOPKINS UNIV	Friedman, D S	GSFC	Long, D	NAS 5-23732	2601
56	JOHNS HOPKINS UNIV	Friedman, D S	GSFC	Piro, P A	NAS 5-26085	2604
56	LINCOLN UNIV-PA	Alterescu, S	GSFC	Frankowsky, J W	NAS 5-23800	3851
56	MASS INST OF TECH	Mehler, W R	ARC	Graybiel, A M	NAG 2-124	2831
56	MASS INST OF TECH	Winget, C M	ARC	Wurtman, R J	NGR 22-009-627	2906
56	MED COL OF WISC	Ellis, S	ARC	Riley, D A	NCA 2-432201	4581
56	MEHARRY MEDICAL COL	Alterescu, S	GSFC	Braun, G	NAS 5-23801	3987
56	MOREHOUSE COLLEGE	Alterescu, S	GSFC	Barreras, R J	NAS 5-23571	2233
56	STANFORD UNIVERSITY	Holton, E M	ARC	Feldman, D	NCA 2-745107	1438
56	STANFORD UNIVERSITY	Goldwater, D	ARC	Debusk, R F	NCA 2-745108	1439
56	STANFORD UNIVERSITY	Sandler, H	ARC	Popp, R	NCC 2-1	1442
56	STANFORD UNIVERSITY	Sandler, H	ARC	Meindl, J D	NCC 2-38	1448
56	STANFORD UNIVERSITY	Sandler, H	ARC	Harrison, D C	NCC 2-51	1452
56	STANFORD UNIVERSITY	Sandler, H	ARC	Harrison, D C	NCC 2-52	1453
56	STANFORD UNIVERSITY	Young, D R	ARC	Steele, C	NCC 2-145	1472
56	STANFORD UNIVERSITY	Keil, L C	ARC	Luetscher, J A	NGR 05-020-456	1483
56	STANFORD UNIVERSITY	Sandler, H	ARC	Harrison, D C	NGR 05-020-634	1485
56	STANFORD UNIVERSITY	Young, D R	ARC	Steele, C R	NSG 2092	1493
56	STATE U NY-BINGHAMTN	Carter, C H	HQ-LC	Jensen, R A	NGT 33-188-801	3469
56	ST U NY-UPST MED CTR	Leon, H A	ARC	Landaw, S A	NCA 2-765001	3504
56	TEMPLE UNIVERSITY	Nachtwey, D S	JSC	Urbach, F	NAS 9-14979	3917
56	TEXAS A&M UNIVERSITY	Barnes, C M	JSC	Hightower, D	NAS 9-16375	4114
56	TEXAS TECH UNIV	Holton, E M	ARC	Kenny, A D	NSG 2137	4138
56	TULANE UNIVERSITY	Mehler, W R	ARC	Brizzee, K R	NAG 2-101	2580
56	UNIV OF ARIZONA	Mandel, A D	ARC	Meinke, W J	NSG 2381	1196
56	UNIV OF ARIZONA	Taylor, G R	JSC	Criswell, B S	NAS 9-16268	1176
56	UNIV CALIF-IRVINE	Mandel, A D	ARC	Tilles, J G	NGR 05-041-012	1622
56	UNIV CALIF-IRVINE	Weigand, A J	LERC	Foltz, E L	NAS 3-21963	1621
56	UNIV CALIF-SAN DIEGO	Homick, J L	JSC	Bullock, T H	NSG 9048	1758
56	UNIV CALIF-SAN FRAN	Cowings, P S	ARC	Kamiya, J	NCA 2-665002	1766
56	UNIV CALIF-SAN FRAN	Sandler, H	ARC	Glantz, S A	NCA 2-665905	1778
56	UNIV CALIF-SAN FRAN	Philpott, D E	ARC	Arnaud, C D	NCA 2-665906	1779
56	UNIV CALIF-SAN FRAN	Altchuler, S I	JSC	Genant, H K	NAS 9-15887	1762
56	UNIV CALIF-SAN FRAN	Altchuler, S I	JSC	Arnaud, C	NAS 9-16027	1763
56	UNIV OF FLORIDA	Buchanan, P	KSC	Grimes, R R	NAG10-4	2133
56	UNIV OF FLORIDA	Kerslake, W R	LERC	Hench, L L	NSG 3273	2158
56	UNIV HOUSTON-CL LAKE	Bungo, M	JSC	Coleman, A E	NAS 9-16136	4166
56	UNIV OF IOWA	Hull, W E	JSC	Abboud, F M	NSG 9060	2488
56	UNIV OF KENTUCKY	Sandler, H	ARC	Knapp, C F	NSG 2318	2553
56	UNIV OF KENTUCKY	Booher, C R	JSC	Bhagat, P K	NAS 9-15452	2546
56	UNIV MARYLAND-COL PK	Mandel, A D	ARC	Goldsby, R A	NSG 2378	2716
56	UNIV MD-EASTRN SHORE	Alterescu, S	GSFC	Chapin, E W	NAS 5-26464	2744
56	UNIV OF MIAMI	Huntoon, C L	JSC	Epstein, M	NAS 9-15473	2167
56	UNIV MICH-ANN ARBOR	Homick, J L	JSC	Anderson, D J	NAS 9-15244	3042
56	U OKLA-HLTH SCI CTR	Lucid, S	JSC	Nordguist, R	NAG 9-18	3775

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56	UNIV SAN FRANCISCO	Young, D R	ARC	Brown, R J	NCC 2-135	1825
56	UNIV SAN FRANCISCO	Robbins, D E	JSC	Benton, E V	NAS 9-15152	1819
56	U TENNESSEE-MEMPHIS	Coleman, M E	JSC	Autian, J	NAS 9-15670	4023
56	UNIV TEXAS-AUSTIN	Sheibley, D W	LERC	Lagow, R J	NSG 3190	4202
56	U TEX HLTH SC CTR-DA	Bungo, M	JSC	Blomquist, C G	NSG 9026	4259
56	UNIV TEX-BIOMED GRAD	Nicogossian, A E	HQ-SB	Key, M M	NGT 44-089-980	4218
56	U TEX HLTH SC CTR-SA	Leach, C S	JSC	George, J N	NAG 9-5	4262
56	U TEX HLTH SC CTR-SA	Leach, C	JSC	Lifschitz, M	NAS 9-16366	4263
56	UNIV WISC-MADISON	Young, D R	ARC	Mazess, R B	NGR 50-002-051	4625
56	UNIV WISC-MADISON	Mandel, A D	ARC	Dick, E C	NSG 2104	4628
56	UNIV WISC-MADISON	Friedman, D S	GSFC	Sieband, M P	NAS 5-26454	4612
56	UNIV WISC-MADISON	Cintron, N M	JSC	Schnoes, H K	NAS 9-15580	4619
56	VIRGINIA COMNWLTH U	Warner, J L	JSC	Eckberg, D L	NAG 9-14	4429
56	VIRGINIA COMNWLTH U	Hardin, J C	LARC	Patterson, J L	NAS 1-16453	4430
56	YALE UNIVERSITY	Mandel, A D	ARC	Evans, A S	NSG 2185	2014
59	BAYLOR COL OF MED	Leach, C S	JSC	Suki, W N	NAS 9-15891	4034
59	BAYLOR COL OF MED	Thirolf, R G	JSC	Chriswell, B S	NAS 9-16029	4035
59	BAYLOR COL OF MED	Thirolf, R G	JSC	Martin, R R	NAS 9-16040	4036
59	BRANDEIS UNIVERSITY	Homick, J L	JSC	Lackner, J R	NAS 9-15147	2767
59	COLORADO STATE UNIV	Nachtwey, D S	JSC	Lett, J T	NSG 9045	1906
59	CORNELL UNIV-MED CTR	Sandler, H	ARC	Reis, D J	NSG 2259	3393
59	EMORY UNIVERSITY	Gomersall, E W	ARC	McClure, H M	NAS 2-10627	2182
59	FLORIDA A&M UNIV	Winget, C M	ARC	Walker, C A	NSG 2029	2103
59	FLORIDA A&M UNIV	Winget, C M	ARC	Soliman, K F	NSG 2183	2104
59	FLORIDA INST OF TECH	Huffman, W O	KSC	Nunn, W M, Jr	NAS10-10225	2107
59	GEORGE WASHINGTON U	Halstead, T W	HQ-SB	Waters, E, Jr	NASW 3165	2044
59	GEORGIA INST OF TECH	Quattrone, P D	ARC	Winnick, J	NAG 2-11	2189
59	GEORGIA INST OF TECH	Quattrone, P D	ARC	Carden, J L	NSG 2323	2222
59	HOWARD UNIVERSITY	Riser, W T	KSC	Wang, Y C	NAG10-2	2073
59	JOHNS HOPKINS UNIV	White, T	JSC	Walker, W G	NAS 9-16030	2609
59	JOHNS HOPKINS UNIV	French, B	JSC	Proctor, D F	NAS 9-16036	2610
59	KENTUCKY STATE UNIV	Hoffler, G N	KSC	Kloek, G	NAG10-5	2541
59	KENTUCKY STATE UNIV	Hoffler, G W	KSC	Kloek, G	NSG 801	2542
59	LINCOLN UNIV-MO	Atwell, B H	NSTL	Molnar, I G	NAG13-1	3122
59	MARQUETTE UNIVERSITY	Smith, M C, Jr	JSC	Fitts, R H	NAS 9-15711	4580
59	MASS INST OF TECH	Quattrone, P D	ARC	Reid, R C	NAG 2-90	2827
59	MASS INST OF TECH	Wydeven, T	ARC	Modell, M	NSG 2403	2923
59	MASS INST OF TECH	Evans, J S	JSC	Young, L R	NAS 9-15343	2887
59	MASS INST OF TECH	Sauer, R L	JSC	Karel, M	NAS 9-16008	2888
59	MIAMI UNIVERSITY	Homick, J L	JSC	Parker, D E	NAS 9-14538	3650
59	MIAMI UNIVERSITY	Evans, J S	JSC	Parker, D E	NAS 9-16049	3651
59	MIAMI UNIVERSITY	Evans, J S	JSC	Parker, D E	NAS 9-16051	3652
59	PURDUE UNIVERSITY	Zill, P	ARC	Hoff, J E	NSG 2401	2422
59	RUSH UNIVERSITY	Evans, J S.	JSC	Gottlieb, G L	NAS 9-16035	2300
59	ST LOUIS UNIVERSITY	Lintott, J	JSC	Vanbeaumont, W	NAS 9-16231	3124
59	SAN FRAN STATE UNIV	Billinghan, J	ARC	Seeger, C L	NCC 2-32	1344
59	SAN JOSE STATE UNIV	Deal, P H	ARC	Holley, D C	NCA 2-675103	1358
59	SAN JOSE STATE UNIV	Wempe, T E	ARC	Plant, W T	NCC 2-34	1364
59	SAN JOSE STATE UNIV	Winget, C M	ARC	Holley, D C	NCC 2-116	1375
59	SO DAKOTA SCHL MINES	French, B	JSC	Gowen, R J	NAS 9-16028	3981
59	STANFORD UNIVERSITY	Sandler, H	ARC	Harrison, D C	NCC 2-126	1470
59	STANFORD UNIVERSITY	Peck, E E	JSC	Popp, R L	NAS 9-16050	1426
59	STANFORD UNIVERSITY	Devincenzi, D L	HQ-SB	Bonner, W A	NGL 05-020-582	1481
59	STATE UNIV NY-ALBANY	Horrigan, D J	JSC	Farhi, L	NAS 9-15802	3455
59	STATE UNIV NY-ALBANY	Peck, E E	JSC	Farhi, L	NAS 9-16042	3457
59	STATE UNIV NY-ALBANY	Williams, J R	MSFC	Van Oss, C J	NAS 8-32947	3453
59	STATE U NY-BINGHAMTN	Souza, K A	ARC	Sulzman, F M	NAS 2-10621	3467
59	UNIV OF AKRON	French, B O	JSC	Herron, D E	NAS 9-16043	3700



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FIELD CODE	INSTITUTION	TECHNICAL OFFICER	TECH OFF LOC	FIRST PRINCIPAL INVESTIGATOR	AGREEMENT NUMBER	ACC NO
59	UNIV OF ARIZONA	Snyder, R S	MSFC	Bartels, P H	NAS 8-31948	1170
59	UNIV OF ARIZONA	Williams, J R	MSFC	Bier, M	NAS 8-32950	1171
59	UNIV OF ARIZONA	Vitale, J A	HQ-ET	Bier, M	NSG 7333	1209
59	UNIV CALIF-L ANGELES	Sandler, H	ARC	Bricker, N S	NCC 2-104	1655
59	UNIV CALIF-L ANGELES	French, B O	JSC	Wiberg, D M	NAS 9-16047	1650
59	UNIV CALIF-SAN DIEGO	Lintott, J	JSC	Ryan, A F	NAS 9-16033	1726
59	UNIV CALIF-SAN DIEGO	French, B	JSC	West, J B	NAS 9-16037	1727
59	UNIV CALIF-SAN DIEGO	White, T	JSC	Morgens, A R	NAS 9-16039	1728
59	UNIV CALIF-SAN DIEGO	Leach, C S	JSC	Ziegler, M G	NAS 9-16312	1729
59	UNIV CALIF-SAN FRAN	Ferandin, J	ARC	Riley, D	NAS 2-10816	1760
59	UNIV CALIF-SAN FRAN	Souza, K	ARC	Cann, C	NAS 2-10927	1761
59	UNIV CALIF-SAN FRAN	White, T T	JSC	Searle, D L	NAS 9-16038	1764
59	UNIV CALIF-SAN FRAN	Lintott, J	JSC	Arnaud, C D	NAS 9-16227	1765
59	UNIV OF DENVER	Booher, C R	JSC	Sturm, R E	NAS 9-15991	1984
59	UNIV OF HAWAII-MANOA	Peck, E E	JSC	D'arriso, J F	NAS 9-16048	2257
59	UNIV HOUSTON-HOUSTON	Tremor, J W	ARC	Cowles, J R	NAS 2-10087	4145
59	UNIV HOUSTON-HOUSTON	Sauer, R L	JSC	Cox, J E	NAS 9-11676	4146
59	UNIV HOUSTON-HOUSTON	Carter, C H	HQ-LC	Fox, G E	NGT 44-005-801	4154
59	UNIV ILLINOIS-URBANA	Thirolf, R G	JSC	Voss, E W	NAS 9-15328	2361
59	UNIV OF KENTUCKY	Peck, E E	JSC	Bhagot, P K	NAS 9-16034	2547
59	UNIV OF KENTUCKY	Peck, E E	JSC	Bhattacharga, A	NAS 9-16045	2548
59	UNIV MICH-ANN ARBOR	Tremor, J W	ARC	Nace, G W	NAS 2-10945	3017
59	UNIV MICH-ANN ARBOR	Reschke, M F	JSC	Anderson, D J	NAS 9-15375	3043
59	U OKLA-HLTH SCI CTR	Sandler, H	ARC	Stone, H L	NCC 2-24	3780
59	UNIV OF PACIFIC	Holton, E M	ARC	Roberts, W E	NCA 2-588002	1815
59	UNIV OF PENNSYLVANIA	Peck, E E	JSC	Brown, A H	NAS 9-15531	3920
59	UNIV OF PENNSYLVANIA	White, T T	JSC	Stein, T D	NAS 9-16031	3921
59	UNIV SAN FRANCISCO	Souza, K A	ARC	Benton, E V	NAS 2-10161	1816
59	UNIV SAN FRANCISCO	Klein, H P	ARC	Satyanarayana, T	NCC 2-85	1824
59	UNIV TEXAS-DALLAS	Peck, E E	JSC	Blomquist, C G	NAS 9-16044	4237
59	UNIV OF WASHINGTON	French, B O	JSC	Mlastala, M P	NAS 9-16052	4544
59	VIRGINIA COMNWLTH U	Peck, E E	JSC	Eckberg, D L	NAS 9-16046	4431
59	WASHINGTON UNIVERSTY	Souza, K A	ARC	Simmons, D J	NAS 2-10636	3150
59	WRIGHT STATE UNIV	French, B O	JSC	Petrofsky, J S	NAS 9-16041	3757
59	WRIGHT STATE UNIV	Nicogossian, A E	HQ-SB	Mohler, S R	NGT 36-024-790	3759
61	MASS INST OF TECH	Patton, R M	ARC	Wurtman, R J	NAG 2-132	2833
61	SAN JOSE STATE UNIV	Daunton, N G	ARC	Fox, R A	NCA 2-675009	1355
61	UNIV CALIF-SAN FRAN	Cowings, P S	ARC	Kamiya, J	NCC 2-115	1780
61	UNIV OF SANTA CLARA	Connors, M	ARC	Akins, F R	NCC 2-49	1837
61	UNIV OF UTAH	Carter, C H	HQ-LC	Nielson, H C	NGT 45-003-800	4280
62	JOHNS HOPKINS UNIV	Patton, R M	ARC	Brady, J V	NGR 21-001-111	2614
62	PURDUE UNIVERSITY	Patton, M	ARC	Castore, C H	NCA 2-605001	2416
69	BOSTON UNIVERSITY	Powell, C A	LARC	Hellman, R D	NSG 1644	2761
69	MASS INST OF TECH	Remington, R W	ARC	Kenyon, R V	NAG 2-103	2828
69	OHIO STATE UNIV	Lauber, J K	ARC	Rockwell, T H	NAG 2-112	3657
69	OHIO STATE UNIV	Dunn, R S	ARC	Jagacinski, R J	NSG 2179	3684
69	OLD DOMINION UNIV	Carter, C H	HQ-LC	Coates, G D	NGT 47-003-800	4375
69	SAN JOSE STATE UNIV	Curry, R E	ARC	Regan, J E	NAG 2-84	1346
69	SAN JOSE STATE UNIV	Tanner, T A	ARC	Plant, W T	NCC 2-35	1365
69	SAN JOSE STATE UNIV	Hartzell, E J	ARC	Plant, W T	NCC 2-37	1366
69	STANFORD UNIVERSITY	Ahumada, A H	ARC	Karamcheti, K	NCC 2-44	1449
69	STANFORD UNIVERSITY	Powell, C A	LARC	Karamcheti, K	NAG 1-17	1384
69	TEXAS CHRISTIAN UNIV	Huff, E M	ARC	Arnoult, M D	NAG 2-69	4134
69	TEXAS CHRISTIAN UNIV	Powell, C A	LARC	Arnoult, M D	NAG 1-22	4133
69	TUFTS UNIVERSITY	Palmer, E A	ARC	Chechile, R A	NAG 2-51	2950
69	UNIV CALIF-SAN FRAN	Cowings, P S	ARC	Naifeh, K	NCA 2-665007	1771
69	UNIV MARYLAND-COL PK	Menchen, D	GSFC	Leibowitz, Z B	NAS 5-26448	2671
69	UNIV OF MIAMI	Curry, R E	ARC	Wiener, E L	NCC 2-152	2170

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69	UNIV TEXAS-AUSTIN	Patton, R M	ARC	Helmreich, R L	NSG 2065	4201
69	U TEX MED BRANCH-GAL	Reschke, M F	JSC	Correia, M J	NAS 9-14641	4255
69	UNIV OF VIRGINIA	DeLoach, R	LARC	Cook, G	NSG 1509	4420
72	ARIZONA STATE UNIV	Bifano, W J	LERC	Bahr, D M	DEN 3-50	1093
72	OLD DOMINION UNIV	Batten, B G	LARC	Strangways, R S	NAG 1-66	4348
73	MASS INST OF TECH	Warner, J L	JSC	Uhlmann, D R	NAG 9-12	2856
73	YALE UNIVERSITY	Roland, A	HQ-LH	Theodore, E	NASW 3430	2012
76	CAL STATE U-HAYWARD	Holley, H L	ARC	Huttman, E	NCA 2-290101	1321
79	GEORGETOWN UNIV	Tuttle, F B	HQ-LF	Cheston, T S	NASW 3397	2061
79	UNIV CALIF-BERKELEY	Tuyahov, A J	HQ-ET	Colwell, R N	NSG 7522	1602
79	UNIV MICH-ANN ARBOR	Clevenson, S	LARC	Kalton, G	NAS 1-16107	3012
79	UNIV MICH-ANN ARBOR	Marsik, S J	LERC	Roberts, A F	NAG 3-185	2997
99	BOWIE STATE COLLEGE	Chapman, J W	GSFC	Kirksey, C H	NGT 21-027-012	2590
99	CAL STATE U-CHICO	Bondurant, L	LERC	Lewis, M R	NAS 3-22172	1316
99	COLUMBIA UNIVERSITY	Jennings, N	GSFC	Yavarkovsky, J	NAS 5-25422	3321
99	ESTRN SHORE CMTY COL	Milliner, J B	WFC	Layman, P	NAS 6-2964	4322
99	GEORGIA INST OF TECH	Lee, R B	LARC	Chestnutt, C C	NAS 1-16845	2203
99	HAMPTON INSTITUTE	Erickson, W D	LARC	Darden, G C	NAS 1-16455	4335
99	HARVARD UNIVERSITY	Clark, T	GSFC	Lilley, A E	NAS 5-25677	2782
99	HOWARD UNIVERSITY	Carter, C H	HQ-LC	Fan, D N	NGT 09-011-060	2083
99	IMPERIAL C SCI & TEC	Povinelli, L A	LERC	Rackham, O	NASW 3435	4654
99	MASS INST OF TECH	Taylor, T C	HQ-SP	Bridge, H S	NGL 22-009-638	2900
99	MORGAN STATE UNIV	Pohly, J G	HQ-LC	Proctor, N K	NGT 21-025-080	2628
99	NEW YORK UNIVERSITY	Roberson, F I	HQ-ET	Fusfeld, H I	NSG 7636	3414
99	NORTHWESTERN UNIV	Graves, E B	LARC	Spencer, F A	NAG 1-180	2284
99	OKLAHOMA STATE UNIV	Graves, C M	HQ-LC	Wiggins, K	NASW 3313	3768
99	OLD DOMINION UNIV	Huffman, J P	LARC	Stohrer, F F	NAS 1-16537	4363
99	PENN STATE U-UNIV PK	Irons, J R	GSFC	Turner, B J	NAS 5-26323	3874
99	PENN STATE U-UNIV PK	Dottavio, C L	GSFC	Turner, B J	NAS 5-26468	3876
99	PENN STATE U-UNIV PK	Labovitz, M	GSFC	Turner, B J	NAS 5-26652	3879
99	PURDUE UNIVERSITY	Short, N M	GSFC	Davis, S M	NAS 5-26406	2411
99	PURDUE UNIVERSITY	Gordon, F	GSFC	Landgrebe, D A	NSG 5414	2431
99	SOUTHEASTN OKLA ST U	Bivins, R G	HQ-ET	Harmon, J	NASW 3498	3774
99	STANFORD UNIVERSITY	Gevarter, W B	HQ-RT	Suppes, P	NAGW 6	1407
99	ST UNIV SYSTM OF FLA	Dolby, W	HQ-ET	Unavailable	NASW 3060	2118
99	TUFTS UNIVERSITY	Hart, S G	ARC	Kreifeldt, J G	NCC 2-93	2951
99	UNIV OF AKRON	Glazer, J H	ARC	Desaussure, H	NCA 2-5101	3701
99	UNIV OF ARIZONA	Segura, R	LARC	Hamilton, D J	NAG 1-169	1124
99	UNIV CALIF-BERKELEY	Billingham, J	ARC	Bowyer, S	NCC 2-36	1567
99	UNIV CALIF-BERKELEY	Ellis, S	ARC	Stark, L	NCC 2-86	1570
99	UNIV CALIF-BERKELEY	Warner, J L	JSC	Depaolo, D J	NAG 9-15	1536
99	UNIV CALIF-BERKELEY	Bollenbacher, G	LERC	Sullivan, L A	NAG 3-111	1512
99	UNIV CALIF-BERKELEY	Taylor, T C	HQ-SP	Price, P B	NGL 05-003-497	1580
99	UNIV CALIF-HASTNGS C	Glazer, J H	ARC	Henke, D F	NCA 2-280001	1614
99	UNIV CALIF-S BARBARA	Sinnott, D B	ARC	Estes, J E	NAG 2-121	1786
99	UNIV OF CHICAGO	Taylor, T C	HQ-SP	Meyer, P	NGL 14-001-258	2326
99	UNIV OF CHILE	Force, C A	GSFC	Diaz, E	NAS 5-1925	4652
99	UNIV OF CONNECTICUT	Bivins, R E	HQ-ET	Wilde, D	NASW 3191	1998
99	UNIV OF DENVER	Ault, L A	HQ-ET	Johnson, F D	NASW 3113	1985
99	UNIV OF DENVER	Ault, L A	HQ-ET	Johnson, F D	NASW 3466	1986
99	UNIV HOUSTON-HOUSTON	Smith, M C	JSC	Bell, L	NAS 9-15944	4148
99	UNIV OF KENTUCKY	Dolby, W	HQ-ET	Unavailable	NASW 3039	2549
99	UNIV MARYLAND-COL PK	Truskowski, W	GSFC	Rieger, C S	NAS 5-25764	2668
99	UNIV MD-EASTRN SHORE	Oberholtzer, J D	WFC	Wutoh, J G	NAG 6-3	2740
99	UNIV MD-EASTRN SHORE	Foster, J N	WFC	Smith, J C	NCC 6-3201	2745
99	UNIV OF NEW MEXICO	Bivins, R G	HQ-ET	Unavailable	NASW 2936	3288
99	UNIV OF NEW MEXICO	Bivins, R G	HQ-ET	Morain, S A	NASW 3408	3289
99	UNIV OF PITTSBURGH	Bivins, R G	HQ-ET	Unavailable	NASW 3042	3930

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99	UNIV OF SANTA CLARA	Margozzi, A P	ARC	Greeley, R	NCC 2-60	1838
99	UNIV OF SOUTHERN CAL	Bivins, R E	HQ-ET	Mixer, R	NASW 3235	1860
99	UNIV OF SOUTHERN CAL	Gilbert, R L	HQ-ET	King, R G	NASW 3461	1861
99	UNIV OF SOUTHERN CAL	Bivins, R G	HQ-ET	Mixer, R	NASW 3470	1862
99	UNIV TEXAS-DALLAS	Taylor, T C	HQ-SP	Hanson, W B	NGL 44-004-130	4239
99	VIRGINIA POLY INST	Wempe, T E	ARC	Wierwille, W W	NAG 2-17	4459
99	VIRGINIA POLY INST	Hohl, F	LARC	Unavailable	NAS 1-15080	4469
99	VIRGINIA POLY INST	DeLoach, R	LARC	Frair, L	NSG 1598	4494
99	VIRGINIA STATE UNIV	Owens, F C	LARC	Boese, A E	NAS 1-16079	4506

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